

# FLIGHT

The  
AIRCRAFT ENGINEER  
AND AIRSHIPS

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## DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1930	
Feb. 19	.... "Gliding." Lecture by Dr. Walter Georgii and Herr Stamer before R.Ae.S.
Feb. 21	.... R.Ae.S. Dinner to Dr. Georgii and Herr Stamer and Discussion on Gliding, at St. Ermin's Hotel, Westminster.
Feb. 27	.... "Latest Developments of Aero Engines." Lecture by Mr. A. J. Rowledge before R.Ae.S.
Mar. 1	.... Model Aircraft Club display, Wimbledon Common.
Mar. 5	.... "Air Co-Operation with Mechanised Forces." Lecture by Wing-Com. T. L. Leigh-Mallory before Royal United Service Institute.
Mar. 6	.... "Resistance of Air-Cooled Engines and the Townend Ring." Lecture by Maj. F. M. Green and Mr. H. C. H. Townend before R.Ae.S.
Mar. 10	.... "Air Transport." Lecture by Herr M. Wronsky before R.Ae.S.
Mar. 22	.... Inter-Services Rugby. R.A.F. v. Army at Twickenham.

## EDITORIAL COMMENT



THE congregation of the University of Oxford has passed a statute, ingeniously couched in eloquent dog-Latin, whereby anyone *in statu pupillari* is forbidden *ascendere* in term time from any *aerodromus* within 20 miles of Oxford, and likewise *descendere*, unless he belongs to *Universitatis aerobatarum cohors*. We imagine that this statute has enriched the Latin language by the addition of two words of Greek derivation, namely *aerodromus* and *aerobata*. The former, which ought to mean a place where the air runs about, is not so much dog-Latin or dog-Greek as dog-English; and, though the Latin dictionary is silent on the subject, our foremost classical university may not be much to blame for doing the best that it could with a term which has been generally accepted. The second word, *aerobata*, presumably means an aeroplane—that is to say, something which "walks on air." Again, it is useless to turn to the Latin dictionary or the Greek lexicon for help. Daedalus left no glossary of aeronautical terms behind him. To the Air Ministry, however, aerobatics is a term which is not quite synonymous with flying. Nevertheless, *aerobatarum cohors* is not a bad rendering of "air squadron."

In plain English, the statute means that undergraduates and Bachelors of Arts who are still under instruction at the University may not fly or land at any aerodrome near Oxford in term time unless they belong to the O.U. Air Squadron. The Senior Proctor, who proposed the statute (which was carried without a division), protested that he was a keen supporter of flying, and he dissociated himself from the spirit of the University authorities of a century ago who tried to keep the railway out of Oxford. He merely considered that flying should be controlled, and he thought that the O.U. Air Squadron was the proper body to control it.

With the spirit of the Senior Proctor's remarks there is no fault to find. Undergraduates enjoy certain privileges, and they cannot expect quite so much personal liberty as other young men who do

not enjoy those privileges. The University could not properly be indifferent to such questions as that of flying. But we cannot agree that the actual regulation laid down by this statute is reasonable. It appears to have been framed and passed without full consideration of the facts and of the results which must follow. If the O.U. Air Squadron were on the same footing as an ordinary flying club, with a membership limited only by the facilities which it could afford to give, the statute would be absolutely reasonable. But the O.U.A.S. is not a club of that sort. It is controlled, not only by the University, but also by the Air Ministry. The number of its members is limited by the Ministry to 75, and the applications for membership are always far in excess of the vacancies. As a result, the 75 members are very specially picked men. There are very many other undergraduates who are very good men indeed, and excellent flying material, who cannot gain admission to the squadron. Some of them have already taken "A" licences at flying clubs in the vacations, and we believe that some of them are owners of aeroplanes. Of late, the qualified pilots have been allowed to fly in term time, but now they are forbidden to do so. This does not seem reasonable, and it is certainly not desirable. To increase the number of pilots in the country is a matter of national importance, and it is eminently desirable to draw as many University men as possible into the movement. That Oxford should limit the number to about 25 *per annum* is a regrettable state of affairs.

As yet no one seems to have considered the possibility of women undergraduates wishing to fly; yet the question is sure to arise sooner or later. The O.U. Air Squadron is not really a military body. The chief reason for its existence is stated to be the promotion of interest in flying, not an addition to the defence of the country. Yet we can hardly conceive of women being admitted as members of the squadron and receiving training from R.A.F. officers. Therefore this new statute will permanently debar them from flying in term time.

\* \* \*

A report has appeared in a section of the daily press that the next attempt by the Royal Air Force to raise the speed of the world's record over a 3-km. course will be made at Felixstowe. The reason for

#### High-Speed Flying

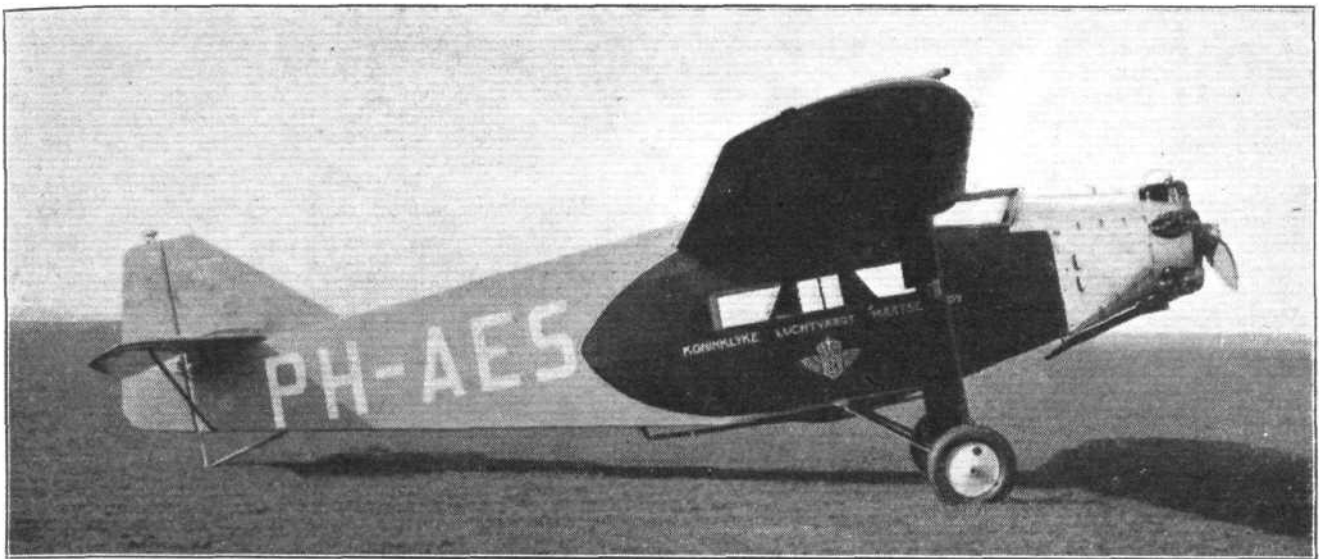
this assumption seems to have been that the electrical timing apparatus used to time the flights of Orlebar and Stainforth has been moved from Calshot to Felixstowe. The fact of the matter is that certain experimental flights with the Schneider seaplanes are to be carried out for the Director of Supply and Research, who desires in particular to check the scale effect of the figures obtained in the wind tunnels at the National Physical Laboratory. These flights will be carried out, not by any member of the late High-speed flight, all of whom have now been posted to other units, but by Flight-Lieut. J. N. Boothman from No. 32 Fighter Squadron at Kenley.

Nevertheless, the rumour raises the whole question of a suitable place for carrying out all high-speed flying, not excepting the Schneider contest itself. Felixstowe is eminently unsuitable for any such work. The Solent and Southampton Water were selected for the Schneider contest by the Royal Aero Club last year after a long and careful examination of some other sites. On the whole, the Solent was judged to be the best.

When it came to training, however, the Solent and Southampton Water proved to be far from ideal. There is too much shipping on those waters. The Admiralty had to make most elaborate arrangements to keep the racing course clear on the two days of the contest. How great the inconvenience was to shipping interests it is not easy for a layman to estimate. Had the race been postponed on account of weather, that inconvenience would certainly have been far greater than it was. What did come home forcibly to those who followed the training closely was the inconvenience to the seaplanes and the pilots from the crowded state of the waters. Moments when all conditions are exactly right for racing seaplanes to take off do not always occur just when they are wanted, and if such a moment is lost because an Atlantic liner, hurrying home to Southampton, disregards signals and churns up the waves, the loss of flying practice is not slight. This happened on quite a number of occasions. Another nuisance, and perhaps a greater one, was the amount of flotsam in Southampton Water. One evening Waghorn, after landing the machine which afterwards won the contest, lost steerage way and collided with two barges.

It was really great good luck that the future winning machine was not seriously damaged. A few days later, Dal Molin, in the Macchi which then held the world's record and which won second place in the contest, holed a float badly through hitting some floating debris, and the machine nearly sank. All the Italians were disgusted with the conditions at Calshot, and compared them with the clean open waters of Lake Garda. Things were no worse for them than they were for us, but their complaints had much justification. Had the two machines destined to be the winner and the second in the race both sunk during practice, not from flying accidents but through collisions on the surface, the contest would have become an expensive farce.

In fact, one must admit that there is a great deal to be said for the Italian view that a lake is the ideal place for practice, if not for the contest itself. The United Kingdom is not over-rich in suitable lakes. Not only is a wide stretch of open water necessary, but it is also desirable that the shores should not be surrounded by high hills to set up erratic wind currents. Lake Windermere is out of the question, and so, too, are all the lakes in Scotland. But what about Lough Neagh, in Northern Ireland? From corner to corner, both from south-west to north-east and from north-west to south-east, there is a clear 20 miles of water and at its narrowest part the lake is eight miles wide. The shores are open and flat for several miles on all sides. Antrim, at the north-east corner, is a town of some size, and Belfast itself is only 12 miles distant as the aeroplane flies. The surroundings in other respects are delightful. The only drawbacks are the weather of Northern Ireland, which is even more rainy than that of southern England, and the absence of sheds and slipways. The former cannot be altered, but the latter can, at a certain cost. Still, high-speed flying has become a recognised activity of the Royal Air Force, and it is not likely ever to be dropped. Quite apart from questions of the Schneider, a really suitable spot for high-speed flying ought to be found and gradually developed. On the face of it a lake seems to be the best sort of spot, and Lough Neagh to be the most suitable of British lakes.



## THE KOOLHOVEN F.K.40

WITH a strong "family resemblance" to the Koolhoven F.K.41, now become the Desoutter Sports Coupé, the Koolhoven F.K.40 is of somewhat higher power and has a greater fuselage space, so that it can be used variously as a "feeder line" passenger machine, as a freight or mail carrier, or as a private touring machine with spacious seating accommodation for three passengers exclusive of pilot. As distinct from the smaller machine, however, the F.K.40 has a welded steel tube fuselage.

The photograph at the top of this page shows the first machine delivered by Mr. Koolhoven to the K.L.M. Royal Dutch Air Lines, and has an accommodation arrangement which is not standard. Actually the F.K.40 may be said to have been designed as a civilian "General Purpose" machine, the internal accommodation being varied to suit the particular purpose. For instance, when the machine is to be used

### KOOLHOVEN F.K.40

Gnome-Rhone 230 h.p. "Titan"

Length, o.a.	.. 11m. (36 ft. 2 ins.).
Wing Span	.. 14.06 m. (46 ft. 1 in.).
Wing Area	.. 30 sq. m. (323 sq. ft.).
Tare Weight	.. 950 kg. (2,090 lbs.).
Disposable Load	.. 950 kg. (2,090 lbs.).
Gross Weight	.. 1,900 kg. (4,180 lbs.).
Wing Loading	.. 63 kg./sq. m. (12.95 lb./sq. ft.).
Power Loading	.. 8.25 kg./h.p. (18.18 lbs./h.p.).
"Wing Power"	.. 7.67 h.p./sq. m. (0.71 h.p./sq. ft.).
Maximum Speed	.. 188 km./h. (116 m.p.h.).
Cruising Speed	.. 165 km./h. (102 m.p.h.).
Landing Speed	.. 85 km./h. (53 m.p.h.).
Climb to 1,000 m. (3,300 ft.)	.. in 9 mins. 50 secs.
Climb to 2,000 m. (6,600 ft.)	.. in 24 mins.
Service Ceiling	.. 3,800 m. (12,500 ft.).

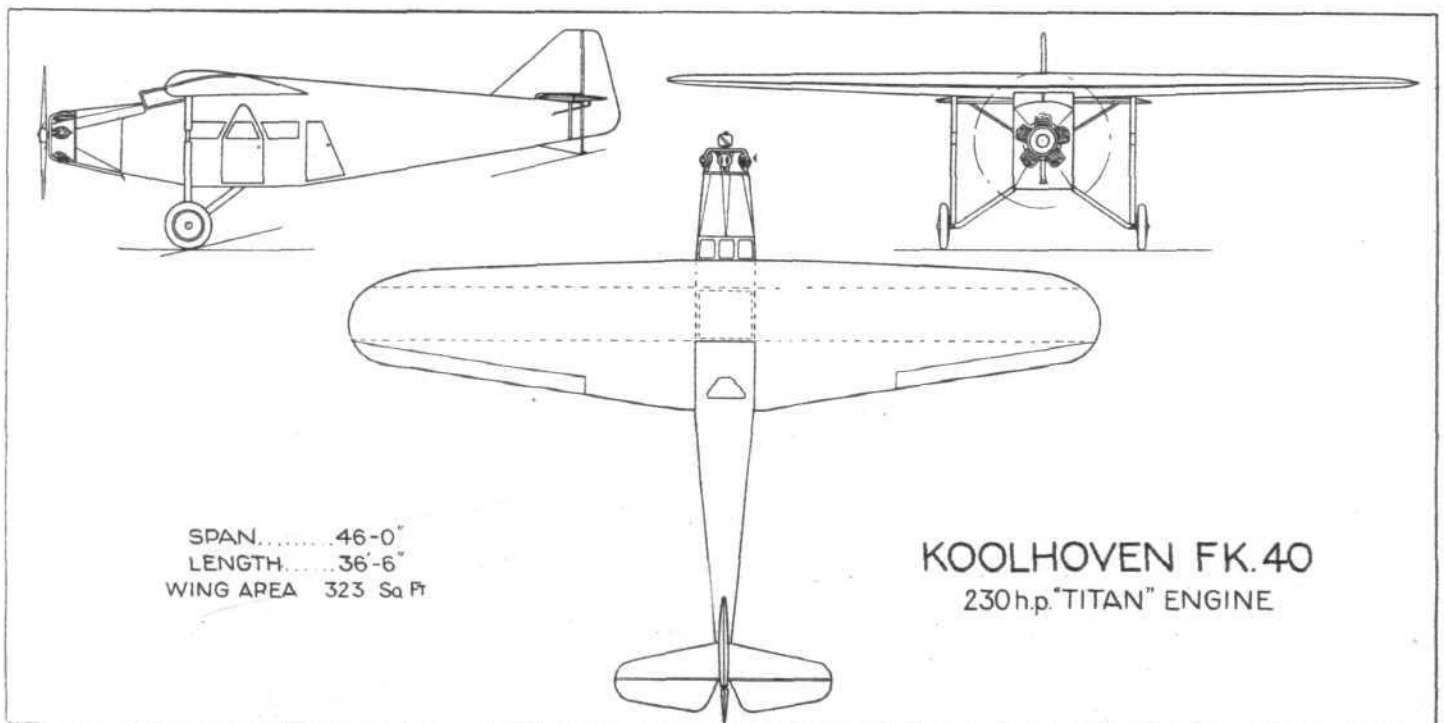
$$\text{"High-speed Figure"} = \frac{\eta}{2k_D} = 14.8$$

as a passenger-carrier, it can be fitted out with 4 seats for passengers, and with two seats side by side for pilot and assistant pilot. In this case a luggage compartment is provided aft of the saloon.

Should the machine be required for freight or mail carrying, the cabin can be boarded up, leaving a freight or mail space of some 190 cub. ft. In this case it is suggested that a single seat be provided for one pilot only.

Finally, the layout can be so arranged that there is a pilot's single seat, centrally placed ahead of the cabin, and seating accommodation in the saloon for six passengers. This last arrangement gives, perhaps,

the greatest pay load for the horse-power expended, in that the power is equivalent to less than 40 h.p. per paying passenger. In this form, therefore, the machine should be very economic to operate. It is only fair to point out, however, that it is doubtful whether the



THE KOOLHOVEN F.K.40 PASSENGER MONOPLANE: General Arrangement Drawings.



F.K. 40 would pass the British Air Ministry's take-off and climb tests (*i.e.*, clearing an obstacle 20 metres high in less than 500 metres, and reach an altitude of 420 metres in less than 3 minutes). With full load the machine carries fairly high loadings: Wing loading 13 lbs./sq. ft. and power loading 18.2 lbs./h.p. If the machine *can* pass these tests, its ratio of gross to tare weight (*i.e.*, 2) is extremely good. In other words, when fully loaded the F.K.40 carries its own weight in disposable load.

In aerodynamic design the F.K.40 is a high-wing cantilever monoplane, with wings tapering in plan form and a fairly deep fuselage of rectangular section. The performance figures, taken in conjunction with the power and wing loadings, indicate that the design is of about average efficiency for a machine of this type, with a "High-speed Figure" value of about 15, which, if a propeller efficiency of 75 per cent. is assumed, corresponds to a minimum drag coefficient of 0.025 in British "absolute" units.

The constructional features of the Koolhoven F.K.40 include, as already mentioned, a welded steel tube fuselage and all-wood wing. In front the fuselage terminates in a steel plate engine mounting, and the attachment of the wing to the fuselage is by four bolts only, so that the wing is relatively easily taken off, thus compensating for the absence of folding wings.

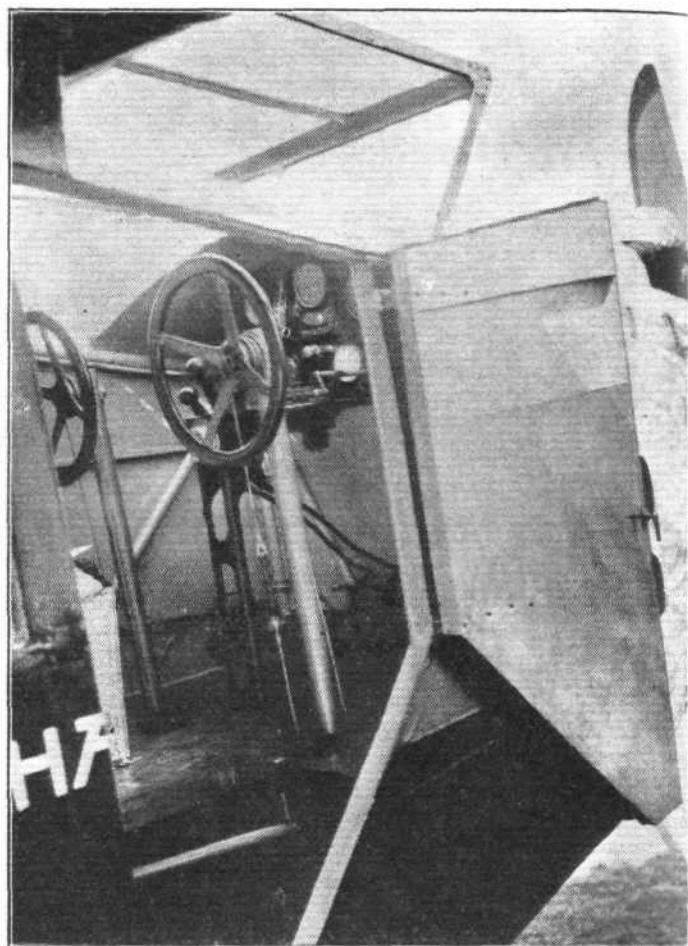
The wing construction comprises two parallel main spars, which run right through from tip to tip, and which are of built-up box section spruce, the flanges being laminated. The wing covering is in the form of plywood. The ailerons are operated by torque tubes of duralumin, housed inside the leading edge of the wing. The tail plane and fin are of wood construction, similar to that of the wing, while the elevator and rudder are of welded steel tube construction, fabric covered. Trimming gear for the tail plane is provided.

The undercarriage is of the Oleo type used by Mr. Koolhoven since about 1915, and as the wheel track is very wide, there should be little or no risk of the machine turning over on the ground. If the machine is fitted with wheel brakes, as it can be, if desired, a tail wheel can be fitted in place of the standard tail skid.

The Gnome-Rhone "Titan" engine is so mounted and cowed that by removing a few cowl panels the whole of the engine installation can be inspected. The petrol tank is mounted in the centre of the wing on flexible supports, so that damage to the tank is extremely unlikely. The position of the tank is such that direct gravity feed to the engine is provided. There are two petrol cocks: one under the tank and another close to the carburettor. The lower petrol cock is operated from a control in the pilot's cockpit, close to the throttle lever.

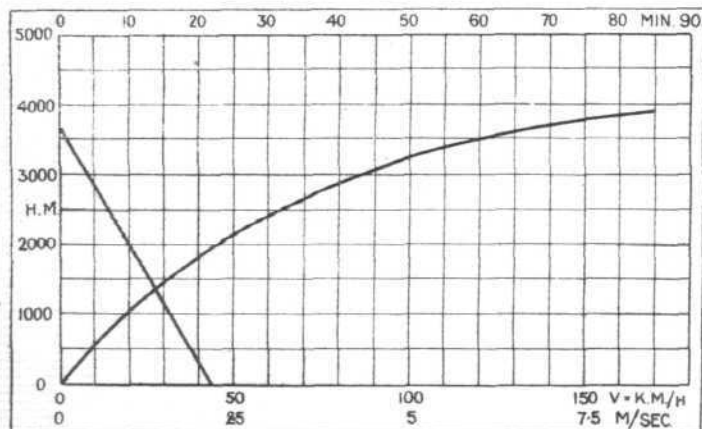
In order to give an idea of the roominess of the cabin of the F.K.40, in spite of the relatively small size of the machine, it may be pointed out that the cabin measures 7 ft. in length, by 3 ft. 10 in. in width by 5 ft. 11 in. in height, giving a cubic capacity of approximately 157 cubic feet. The luggage compartment measures 2 ft. 11 in. in length, by 3 ft. 6 in. in width, by 5 ft. 9 in. in height, giving a cubic capacity of about 58 cu. ft.

In conclusion, it may be mentioned that the F.K.40 has

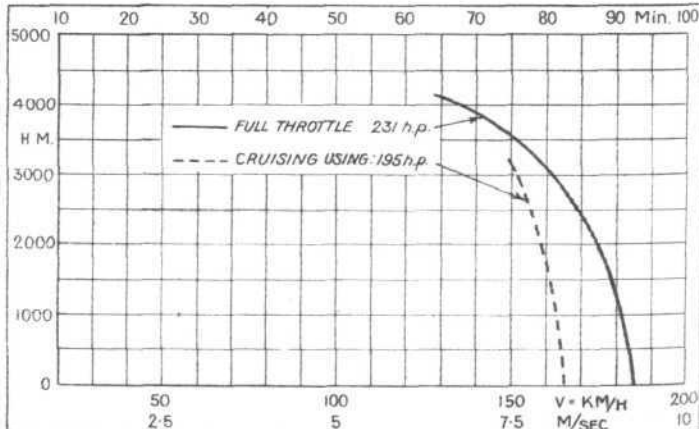


Side-by-side dual control can be provided, as this view, looking into the cockpit, illustrates.

been designed to conform to the I.C.A.N. load factors, etc., and that the machine is reported to be very easy to fly, having a considerable amount of natural stability, coupled with good controllability, even at or near the stall, when the machine will sink without dropping either wing tip. The tail plane, it will be noticed, is mounted direct on top of the fuselage, and not some distance up on the vertical fin, as was the case originally with the F.K.41. In the latter machine Mr. Koolhoven's object in placing the tail plane high was to avoid the risk of the machine nosing over when the engine was started by the owner-pilot himself without outside assistance. As the F.K.40 is intended rather for commercial work, where this contingency is less likely to arise, one assumes that he has chosen the low position so as to shorten the run to take-off.



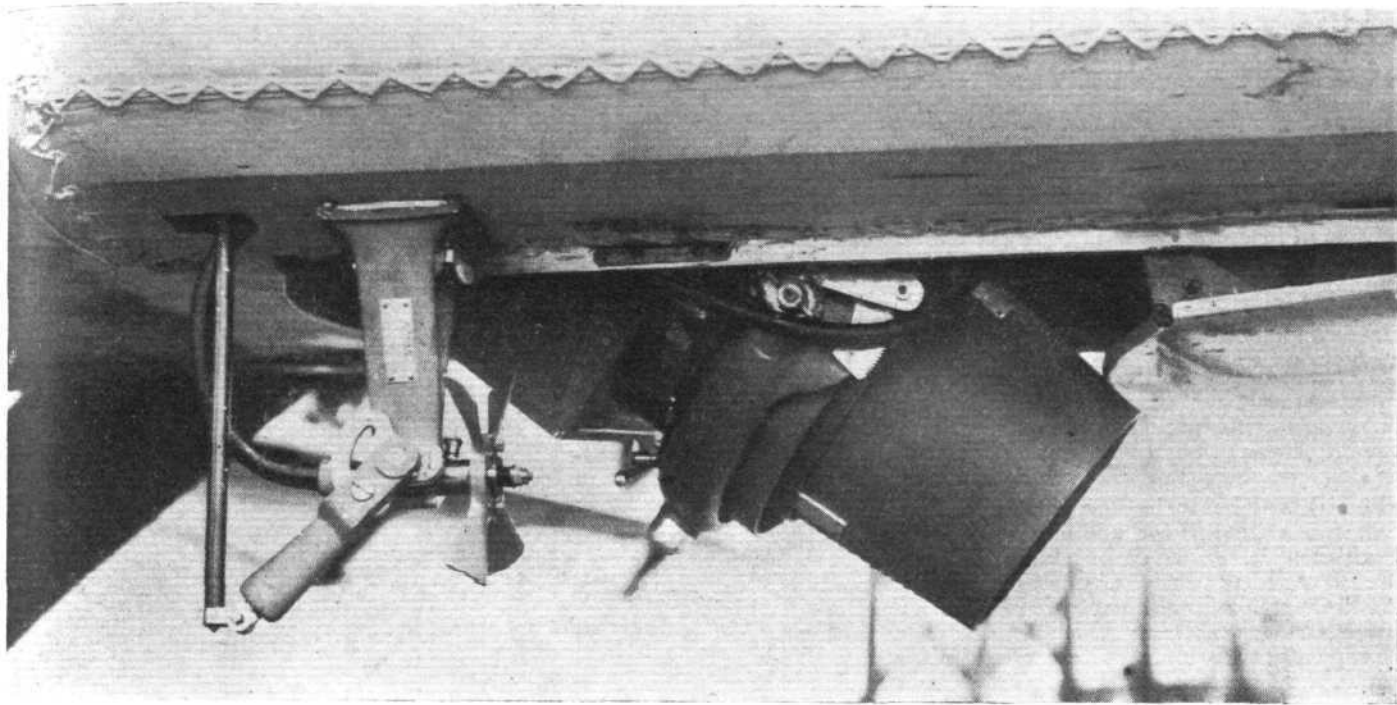
PERFORMANCE CURVES OF THE KOOLHOVEN F.K.40: On the left curve of climb and time to height, and on the right speed curves at different altitudes.



#### How They Do It in Czechoslovakia

THE Masaryk Air League, needing money for improvements of aerodromes, buildings and maintenance of hangars, and also for purchasing sport 'planes, is raising money by means of an attractive lottery. The amount expected to be realised is 900,000 Cz.K. (about £5,487), and the tickets are

sold at 3 Cz.K. each. The first prize, in the value of 90,000 Cz.K., entitles the winner to a three-month's tour round the world by aeroplane, rail or automobile, with daily stops at the various places in China, Japan, America and Western Europe. There are smaller prizes, some entitling the winners to daily or weekly tours by aeroplane.



ON this page we show how the Eagle Camera has been arranged in the III F's supplied by the Fairey Aviation Co. to the Air Survey Co. for their work in the Sudan. The top view shows the camera projecting underneath the fuselage, and sloped for oblique photography. Below this a view looking down into the cockpit gives one a very good idea as to the room the operator has when working the camera.

This cockpit can be re-arranged to carry three passengers, should it be desired to use the machine for transporting the ground staff from one spot to another or for any such similar work.

G-AATT, the second of these machines to be taken over, is being flown out to the Sudan by Mr. R. C. Kemp with a mechanic, Mr. A. Calder, as his passenger. Mr. Kemp is, of course, the man to whom the Air Survey Co. owes its being, and he is seen below on the right, with Sqdn.-Ldr. Maurice Wright and Mr. A. G. Hazell, who are now also directors of the company. Mr. Kemp left Croydon at 8.30 a.m. on Sunday, February 9, and arrived at Lyon at 2.30 p.m. the same day.



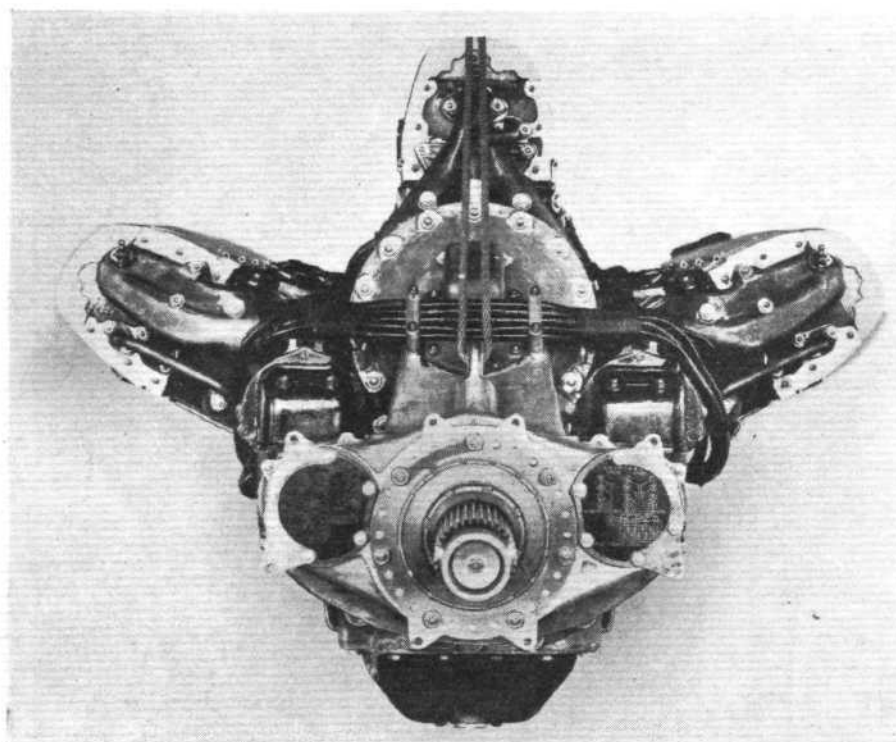
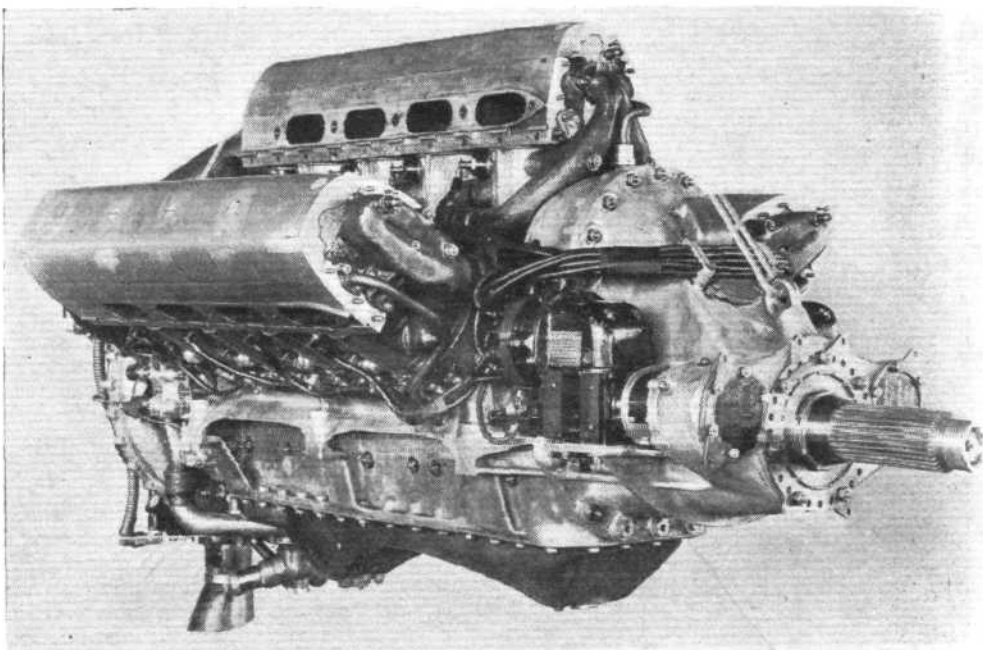


## THE NAPIER VIID RACING ENGINE

THE following brief specification details of the Napier VIID racing engine have been released by the Air Ministry, and may be of interest.

This engine, with which Flt.-Lt. Stainforth set up a world speed record for 1 km. of over 336 m.p.h., is a development of the standard production Napier "Lion," and develops over 1,275 b.h.p. at 3,600 r.p.m. It weighs 1,130 lbs., giving the abnormally low weight per horse-power of 0.889 lb.

From the specification given below, it will be seen that, apart from the extra power and lower weight per horse-power obtained, the overall dimensions of the engine are smaller than the previous Napier racing engine—of which the well-known engineer, Mr. H. R.



Ricardo, said: "The highest thermal efficiency ever yet recorded by any heat engine—namely, 39.5 per cent. on the net shaft horse-power—was obtained by the Napier racing engine, which won the Schneider Trophy in 1927."

Number of cylinders	..	12
Arrangement	..	Three blocks of 4 each, 1 vertical, 2 at 60°.
Bore	..	5½ ins.
Stroke	..	5½ ins.
Horse-power	..	1,275 b.h.p. at 3,600 r.p.m.
Direction of rotation of airscrew shaft		Anticlockwise viewed from airscrew end.
Weight of engine	..	1,130 lbs., complete with airscrew boss.
Weight per horse-power		0.889 lb.
Length overall to centre of airscrew		64.13/16 ins.
Width, overall	..	37½ ins.
Height, overall	..	34½ ins.

### The High-Speed Flight

It was announced recently that Sqdn.-Ldr. Orlebar was to be transferred from the High-Speed Flight to the command of the Flying Boat Development Flight. Flight-Lieut. Stainforth is also to be transferred to another unit. In his place, Flight-Lieut. J. N. Boothman will be transferred from No. 32 Fighter Squadron at Kenley to the Marine Aircraft Experimental Establishment at Felixstowe. There is at present no intention of making further attempts to improve the world's speed record over a 3-km. course in the near future. Further experimental work will, however, be carried out with the machines which were built for the Schneider contest. Flight-Lieut. Boothman will fly the machines for this purpose, working to the requirements of the Director of Supply and Research. In particular it is desired to obtain accurate figures for comparison with the figures obtained by the National Physical Laboratory in wind-tunnel tests with models of the Schneider machines. For this purpose the special photographic timing apparatus used during the record flights of Flight-Lieut. Stainforth and Sqdn.-Ldr. Orlebar has been taken from Calshot to Felixstowe. It was this last fact, doubtless,

which gave rise to the report that the next attempts at a world's speed record would be made at Felixstowe.

### Rescue from Burning Aeroplane

THE King has approved of the award of the Medal of the Military Division of the Most Excellent Order of the British Empire to Pilot-Officer Sidney Noel Wiltshire, Royal Air Force, for conspicuous gallantry displayed at Temple Bruer Landing Ground, Sleaford, on October 21, 1929. This officer belongs to No. 2 Flying Training School, Digby, where he is under instruction. On the occasion mentioned, he was up in a two-seater with Flying Officer H. E. Power as instructor. The machine crashed on landing at Temple Bruer, and the petrol tank at once caught fire. The pupil got free from the wreckage, and then saw that his instructor was held by the foot and could not get clear. Pilot Officer Wiltshire dashed back into the flames and pulled Flying Officer Power clear. The latter's clothes were by that time well alight, and he was badly burnt. Only the promptitude and courage of his pupil saved his life. Pilot Officer Wiltshire was burnt about the face and neck. The aeroplane was completely consumed by the flames. Both officers were taken in another aeroplane to Cranwell Hospital.

# THE ROYAL AERO CLUB AWARDS ITS TROPHIES.

ON February 5, at a banquet held by the Royal Aeronautical Society, the Royal Aero Club, the Air League of the British Empire, and the Society of British Aircraft Constructors, the Duke of York handed the following awards, to those who were to be honoured:—

Flight to India and back in eight days, August 2 to 9, 1929.

—Royal Aero Club Gold Medal, Capt. C. D. Barnard; illuminated address, the Duchess of Bedford.

Britannia Trophy (awarded for most meritorious performance of the year).—Lady Bailey, for her light aeroplane flight from England to South Africa and back, along the west coast.

100-Km. record.—Flt.-Lt. H. R. D. Waghorn, on September 7, 1929, Supermarine-Rolls-Royce S 6, at 330.1 m.p.h., beating the previous record of 1927 by 50 m.p.h. On the same day, less than two hours later, this performance was eclipsed by Flt.-Lt. R. L. R. Atcherley, flying a Supermarine-Rolls-Royce S 6, at a speed of 331.6 m.p.h.

Royal Aero Club certificates.—Flt.-Lt. H. R. D. Waghorn, Flt.-Lt. R. L. R. Atcherley, Supermarine Aviation Works, Ltd., and Rolls-Royce, Ltd.

World's Speed Record.—Flt.-Lt. G. H. Stainforth, on September 10, 1929, at Calshot, on a Gloster-Napier 6. Speed, 336.3 m.p.h.

On September 12, 1929, Sqd.-Ldr. A. H. Orlebar, on a Supermarine-Rolls-Royce S 6, beat the world's record for greatest speed by attaining 357.7 m.p.h. This record still stands, and is 39 m.p.h. in excess of the Italian record of 1928.

Certificates of Royal Aero Club.—Flt.-Lt. G. H. Stainforth, Sqd.-Ldr. A. H. Orlebar, Gloster Aircraft Co., D. Napier and Son, Supermarine Aviation Works, and Rolls-Royce, Ltd.

Schneider Trophy team.—Silver cigarette boxes presented by the Royal Aero Club to Sqd.-Ldr. A. H. Orlebar, Flt.-Lt. G. H. Stainforth, Flt.-Lt. D'Arcy Greig, Flt.-Lt. H. R. D. Waghorn, Flt.-Lt. R. L. R. Atcherley, and F./O. T. H. Moon.



The Hon. Lady Bailey, the recipient of the Britannia Trophy. (FLIGHT Photo.)

THE DUKE OF YORK, having responded to the toast of the members of the Royal family, then proposed the toast of "British Aviation." He said deeds of both men and women in modern machines, which show such magnificent skill and endurance, occur almost every day, and he expressed his appreciation at being able to be present that evening and said that he served in the R.A.F. during the war and shortly afterwards became a pilot, although he had not flown much of recent years.

He mentioned the fact that the Prince of Wales was an owner of an aeroplane of which he made full use.

The Duke said that the second reason why he felt delighted at being able to be present was that he was thus able to associate himself with the tributes which were being paid to the officers of the Schneider Trophy team. He recalled how the race had been won by Flight-Lieut. Waghorn and how even the record that officer set up was

broken by Flt.-Lt. Atcherley on a sister machine, and later both Sqd.-Ldr. Orlebar and Flt.-Lt. Stainforth broke these new records in their successful attempts on the world's speed record.

He also felt that tribute was due to the designers and builders of both the aircraft and engines which had made our victory possible, and he mentioned Mr. R. J. Mitchell, the designer of the Supermarine Company, and the veteran engineer, Mr. R. H. Royce, whose genius was responsible for the winning engine. This combination alone, he averred, showed the absurdity of the oft-repeated statement that the hand of Britain was losing its cunning.

British industry had a collective triumph in the victory, as some forty trades contributed to it.

The Duke then went on to enumerate the notable flights which have more recently been made; first he mentioned the England to India non-stop, a flight which was not dimmed by the tragic end of the two gallant officers who accomplished it, when they crashed in a subsequent attempt to reach



Capt. C. D. Barnard with the Duchess of Bedford on their return from their epoch-making flight.



Capetown in the same machine, and it had been learnt that evening that the Royal Aero Club had posthumously awarded them the highest honour it can bestow—the gold medal of the club.

The flight to India recalled yet another achievement, the flight to India and back in eight days of Capt. C. D. Barnard and the Duchess of Bedford, both of whom were present, and to whom the Duke said he was glad to pay his tribute for their labours and courage in the cause of aviation. Another lady who was well known to all, by name at least, was Lady Bailey, whose lone flight from England to the Cape and return by the West Coast of Africa has set a new standard and blazed a new trail for the private owner, and no honour has been more richly deserved than that which has recently been bestowed upon her. In the last few weeks His Majesty the King has been pleased to bestow honour upon two men, who in their respective spheres have made their mark upon aviation. Marshal of the Air Force, Sir Hugh Trenchard has rightly been called "the Father of the Air Force," and now as Lord Wakefield, though he will be no longer associated with the supreme command, his services and experience will always be at the service of the State. A name synonymous with almost all Empire flights except those of the Services, is that of Lord Wakefield, and no man has deserved better of the British air world than he, not only for his support of Empire flights but for his generous fostering of the light aeroplane clubs.

Lastly, said the Duke, it is pleasant to see here Lieut.-Col. J. T. C. Moore-Brabazon, who barely 21 years ago made the first flight over English soil at the Royal Aero Club's flying ground at Eastchurch.

In conclusion, the Duke of York said that the future of British aviation was indeed bright, and its technical progress assured.

SIR PHILIP SASSOON, the Chairman of the Royal Aero Club, in reply, said that the Royal Family had always been ready to further and foster aviation by all means in their power, and by precept and example they had always been of the greatest practical assistance in making the general public look upon flying as a rational, normal and proper, means of transport.

MR. HANDLEY PAGE, Chairman of the Society of British Aircraft Constructors, also replied. He said that what was wanted was more publicity and propaganda. Our methods were not as bad as they were painted, and in our shops we had far better goods to sell than any other country, but we did not boost them enough. Much, he said, had been talked about the American methods, but he felt the best reply to that would be to read the cutting he had with him from an American Journal:—The chief of the Aeronautics Trade

Division Bureau of Foreign and Domestic Commerce, Mr. Leighton W. Rogers recently said, "British manufacturers of light planes are specialists in the production of standardised and efficient aircraft. Of equal importance is the fact that they are merchandisers. Enquire of most any airplane company in England for performance data and prices, and you will receive a prompt and complete reply, leaving you in doubt about no point which would interest a prospective customer. The quotation will be given so that you can determine what the plane will cost at your flying field or railway station. The interesting house organ and descriptive literature accompanying the courteous letter in response to your enquiry could well be used as a model for American Sales Managers to follow." Mr. Handley Page said he wanted to know what they were going to do about the Schneider Trophy race next year. Mr. MacDonald had said that we were going to do our best to retain it, and we should now know what that best was. The industry was willing and prepared to make considerable financial sacrifice in order to retain the Trophy in this country, this would be the third time, and if we won it again it would never leave us again, and the members of the Royal Aero Club would have a hat and coat stand for all time!

MR. F. MONTAGUE, Under Secretary of State for Air, the third responder to the toast, regretted that the Government could not in the immediate future take a direct part in fostering the Schneider Trophy Race. It was felt that the data collected, and the results so far had justified the expenditure involved but any further expenditure would not be justified, and the time had come for the industry to start running on its own so far as this trophy was concerned, and he hoped that they would see their way to making an entry and being successful and retaining the trophy in Great Britain.

LORD WAKEFIELD then proposed the health of the chairman. He first thanked the Duke of York for the exceptionally kind words with which he referred to what little he (Lord Wakefield) had been able to do for aviation, and he said that there was one thing in the history of the war which had not been made sufficient of, and that was the conferences held at Lympe in which Sir Philip generated confidence and friendship among our allies. Sir Philip, he said, did an immense amount of good, but he did it by stealth, and no one heard of it, and it was therefore appropriate that he should now be able to pay tribute to one on whom he hoped the sun of happiness and prosperity would long shine.

SIR PHILIP, in a short reply, thanked Lord Wakefield for his kind words, and said that he was well named the Patron Saint of Aviation, and it was now fitting that he had ascended to a higher plane. The British Empire was held together by interest and sentiment and we must foster this spirit.

### Airship Development

LIEUT.-COL. V. C. RICHMOND and Major G. H. Scott were guests of the City Livery Club at a luncheon in the Carpenters' Hall on Tuesday, February 11. Colonel Richmond said that he could see no technical reason why airships much larger than R 100 and R 101 should not be built. Economics, which was a matter of research just as much as construction was, would form the next part of the programme.

"Do not ask me," he said, "what will be the fare to India. You might as well have asked George Stephenson what would be the fare from Stockton to Darlington when the railways were derated in 1929. Once speed has been achieved in conjunction with reasonable comfort, airship travel will become a necessity, and it is impossible to forecast what people will pay for a necessity. It is equally impossible to pass an estimate on the quantity and flow of passengers. The factor of speed will create a demand."

None of the disasters prophesied for R 100 and R 101 had come to pass, though they had gone through their trials in some of the worst weather ever recorded for October and November. Major Scott said that airship development had been a success, and continuity of development was now needed. They had to show that the airships were reliable and could run to schedule.

### Civil Aviation and the Petrol Tax

WHEN the petrol tax was first imposed, a last-minute exemption was made in the case of spirit used in the cross-Channel air services from Croydon. It is possible that, had the Budget not already been before Parliament when the representations were put forward, a greater concession would have been made. In fact, as the petrol tax was originally intended to provide funds for the upkeep of our roads, the view is strongly held that it should not have applied to aircraft at all. Now, however, that there is talk of an increase in the

petrol tax as a definite replacement of the horse-power tax, the inequity of the tax, as it affects aircraft, is accentuated. We understand that strong representations have been made to the Chancellor of the Exchequer and to the Air Ministry by the Civil Aviation Section of the London Chamber of Commerce urging that, in view of the importance of the successful development of commercial flying and the disastrous effect on this young industry which attacks on its fuel are likely to have, spirit used in aircraft should be specifically exempted, should any increase in the petrol tax be contemplated.

### Flying Pupils under 21

THE Court of Appeal, on February 11, dismissed an appeal from a judgment of the Wandsworth County Court by Col. H. S. Hamilton, assignee of a debt from the Henderson Flying School, Ltd. The County Court had dismissed an action for fees amounting to £34 for teaching G. W. B. Bennett to fly in 1928, when he was aged 19. In dismissing the appeal, Lord Justice Scrutton said:—"I should like to say this to the plaintiffs. I think they are incurring a very great responsibility if they teach a boy to fly without the knowledge and consent of his parents. I don't envy their feelings if they have to go to the parents and say that a boy has been killed while learning to fly under such circumstances. I suggest to them that if they do get a boy who is apparently under age, they should make sure that his parents know what he is doing before they engage to teach him to fly."

### Thompson Speed Trophy

SENATOR BINGHAM, President of the American National Aeronautical Association, handed over to the British Ambassador at Washington on February 5, the Thompson Speed Trophy, presented by I. S. Thompson for the greatest speed attained in the air, i.e., by Sqdn.-Ldr. Orlebar.



# PRIVATE FLYING AND CLUB NEWS

GLIDING enthusiasts should make a point of attending the informal dinner and discussion which has been arranged by the R.Ae.S. and the Royal Meteorological Society on Friday, February 21. Dr. Georgii and Herr Stamer will attend, and all those who are interested will thus have a further opportunity of hearing them, and also, being an informal dinner, questions may be asked, which should provide those present with a better chance of airing their views than at the preceding lecture. Col. the Master of Sempill will be supported in the chair by Mr. K. Lemfert, president of the Royal Meteorological Society. Members may bring guests, and the dinner will be held at 7.30 p.m. at the St. Ermin's Hotel, Caxton Street, Westminster. Tickets will be 6s. 6d. each.

THE RHÖN-ROSSITTEN GESELLSCHAFT E.V. are holding a most ambitious four-day lecture programme in Darmstadt from March 8 to 10; every subject apposite to gliding will be dealt with. This conference should provide an immense amount of interesting information for those who are gliding enthusiasts.

THE LONDON GLIDING CLUB will hold their first meeting on Thursday, February 20, in the Euston Station Dining Rooms, at 6 p.m. Further particulars may be obtained from the secretary, Mr. S. Bradshaw, 1, Deansbrook Lane, Edgware, Middlesex. This club is the outcome of the formation of the British Gliding Association, and will provide gliding facilities for those in the London area. A glider has been loaned from the Gliding Association for six months, and a second one is now being built. Westerham is the site chosen for gliding.

COL. J. S. MATTHEW, the chairman of the newly formed Dunlop Aero Club, has been admitted to the Freedom of the City of London. He has been connected with the motor car industry for some time and is responsible for many inventions in connection with wheels and motor-car carriage work, and he has had a great deal to do with the introduction of cycles and mechanical transport in the army. During the War he saw service in Egypt, Serbia, Macedonia, Palestine, France, and Belgium. We hope that his inventive genius and gifts for organisation will show rapid fruit in connection with the aero club.

THE ROYAL AERO CLUB held a meeting of the General Council of Associated Light Aeroplane Clubs on February 6, and the Household Brigade Flying Club, the Leicestershire Aero Club, and the Plymouth Aero Club were unanimously elected to the General Council.

A communication from the Air Council, on the subject of Royal Air Force assistance at civil flying meetings in 1930, was considered. It was intimated that, subject to satisfactory proposals being submitted by the General Council, assistance might be forthcoming at four meetings this year.



A JOVIAL FAREWELL: F./O. H. L. Piper, Mr. Marcel Desoutter and F./O. C. E. Kay (Flight Photo.)

The General Council, having considered the programme of meetings for 1930, decided that Royal Air Force assistance, subject to the approval of the Air Council, should be allocated to the following flying meetings: Leicester (Leicestershire Aero Club), April 19; Bristol (Bristol and Wessex Aeroplane Club), May 31; Norwich (Norfolk and Norwich Aero Club), July 26; Liverpool (Liverpool and District Aero Club and Lancashire Aero Club), September 20.

The question of reciprocal membership between the associated light aeroplane clubs was discussed. It was generally agreed that an arrangement whereby members could join other clubs at a reduced subscription was desirable. It was decided that each associated light aeroplane club should submit its own scheme, and a sub-committee of representatives of the following clubs was appointed to report on the various schemes to the next meeting of the General Council: Bristol and Wessex Aeroplane Club, Hampshire Aeroplane Club, Lancashire Aero Club, Leicestershire Aero Club, London Aeroplane Club, Midland Aero Club.

The following dates were selected for the forthcoming club meetings:—

April 19.—Leicester Flying Meeting.

May 31.—Bristol Air Pageant (official opening of Bristol Municipal Aerodrome.)

June 9.—Northampton Flying Meeting.

June 26.—Ipswich Air Pageant.

July 20–August 7.—International Touring Competition for Light Aeroplanes.

July 26.—Norwich Flying Meeting.

September 20.—Liverpool Air Pageant.

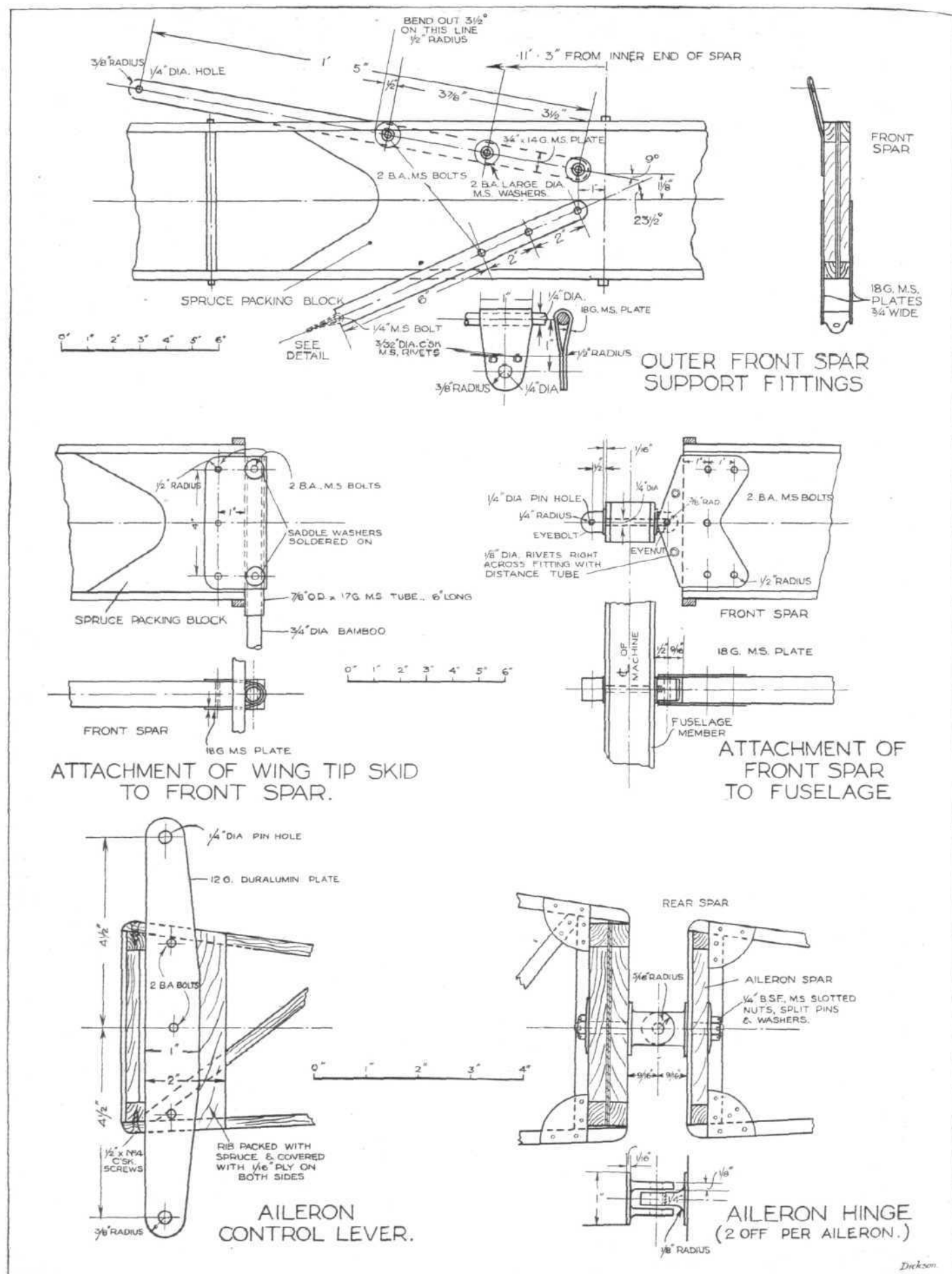
AN AUSTRALIAN FLIGHT is being made by F./Os. Piper and Kay, of 26 Squadron, R.A.F., who have been granted three months' leave in order to visit their homes in New Zealand. They left in the former's Desoutter at 6.30 a.m. from Croydon on Sunday, February 9. The machine is standard with the exception of an extra fuel tank in the place of the passengers' seat on the left-hand side of the machine. The sea passage between Australia and New Zealand is not allowed to be flown by small land machines, and they will have to make this by ship and after their visit the return journey will be made by air.

THE ROYAL NAVAL COLLEGE, DARTMOUTH, is amongst the latest to foster the air-minded spirit of its pupils. Under the keen leadership of Lieut. Kimmins the "Britannia Aeroplane Club" has been formed and over 200 members have already been enrolled. At present activities are confined to models, but a glider is being built and gliding will be undertaken during the next term.

No better place could have been chosen for the formation of such a club, because a large number of the cadets are bound to consider service in the Fleet Air Arm when they get to sea, and since promulgation of the latest order with regard to midshipmen flying will necessitate all doing some flying, it stands to reason that any "air-minded seeds" which are sown in them now will make them keener officers and of more value to the State in later life.

We hope that before long we shall be having model competitions between members of such colleges in much the same way as other sports are treated; a number of the professional staff are also very keen on helping and lectures have been arranged once a fortnight on Saturdays on various technical subjects treated in such a way as to be light and yet instructive.

THE AIRCRAFT CLUB, HARROGATE, has started the construction of a glider, and probably before long we shall be hearing of glider meetings between the glider clubs much in the same way as we have been, and are, having light aeroplane meetings.



**THIS WEEK** we give a few further details of the Dickson glider. To obtain suitable material, we suggest that those who are constructing this machine get in touch with the nearest aircraft manufacturer, who should be willing to supply all the materials necessary and to the correct specifications.

This latter point is most important, as it should be realised that all calculations for strength have been based

on these specifications, and the use of different material would most probably result in disaster. All nuts, pins, turnbuckles, etc., must be positively locked by locking wires or washers or similar means. With regard to the wing spars, joints should be made in the plywood web according to the length of the ply available; a piece of ply about 2 in. wide, glued and pinned to the web either side of the joint would be sufficient.



THE MOTH mentioned in last week's issue as being prepared for Mrs. Wilson in Kenya, left Stag Lane on Tuesday afternoon, February 11, and will leave England shortly. Mr. C. W. T. Wood, late Sergt.-Pilot in the R.A.F., and a member of the Newcastle Aero Club, is flying the machine out.

ANOTHER interesting order for Moths has been received by the De Havilland works, and this is for a large number of Gipsy Moths for training purposes in the R.A.F.

THE TORONTO FLYING CLUB held their annual general meeting on January 27. It is regrettable that their financial statement showed a loss, but if the present keenness of the club is carried this should soon be changed to a profit. During the past year 1,500 hrs. flying have been put in, and 28 members have got their "tickets." During the winter of 1929 flying was carried on with the help of skis. In April a visit was paid to the Selfridge Field, and 12 machines went over and during the year the club was represented at flying meetings at Ottawa, Kingston, Hamilton, St. Catherine's and Cleveland. In October when the National Air Tour came to the city as guests of the club, a large air pageant was held, which function thoroughly upheld the traditions of the club.

VERNON, BRITISH COLUMBIA.—The organisation of a light aeroplane club in Vernon is proceeding under the active management of W. R. McClusky of Vernon, formerly of the R.A.F.

MR. J. H. THOMAS will formally open the new air taxi service of National Flying Services at Hanworth Park on Friday, February 14. After luncheon he will inspect the fleet of Desoutter machines and also the D.H. 61, which is now called "Leone": we hope she feels "happy" with her new name. The fleet of machines, being 27 in number, must be one of the largest in the world for this work.

THE BRISTOL AND WESSEX AEROPLANE CLUB put in 1,041 hrs. 5 mins. flying during 1929 and trained 22 members for their "A" licences and one for a "B" licence. They have three Moths for club use, and five private owners have their machines in the club hangars. At the end of December there were 120 pupils under instruction. Flight-Lieut. L. P. Winters has been appointed manager of the club and will also manage the Municipal airport at Whitchurch. It is hoped to arrange for a course of instruction, in connection with the Guild of Air Pilots, for a second-class Air navigation licence, and if 20 members can be found to join the Air Ministry will probably hold an examination there.

THE NORTHAMPTONSHIRE AERO CLUB record a total of 26 flying hours for January, and enrolled three flying members and 18 associate-members that month.

THE MONTREAL LIGHT AEROPLANE CLUB is another club which is launching in journalism, and its newly published house organ promises to be very entertaining and instructive.

## AVIATION AND THE BRITISH EMPIRE

AT a luncheon (given by the British Empire League at the British Empire Club on Friday, February 7, Lord Thomson gave a very able speech on "Aviation and the British Empire."

In opening, he said, that aviation was a very vast and Imperial matter and we could not afford to neglect it as it was the means of rapidly connecting this country with her Dominions and all her children which go to form this great Empire.

Aviation is not, he said, a matter for party politics but a matter which demands the backing of the dignity of all of those who have the interests of the Empire at heart. He could accept no personal credit for what little he had been able to do toward the progress of aviation and to illustrate this progress more materially he would quote a few figures.

In 1928 the air routes of the British Empire covered 11,000 miles, in 1929 this had risen to 19,000 miles, an increase of 71 per cent., while in 1930 it was hoped that this figure would become 35,000 miles, a further increase of 70 per cent. In 1929 the air routes in Canada were 6,500 miles, those in Australia 5,500 miles, in South Africa 1,500 miles, in India 715 miles, and in this country 5,000 miles.

Many people had criticised the arrangement whereby the administration of the Department of Civil Aviation was vested in the Air Ministry and had suggested that this department would be far better entirely on its own, but his contention was that the amount of correspondence which would be occasioned by such a scheme would entirely smother it, everything technical would have to be referred to the Ministry, and it would be utterly impracticable for it to be entirely divorced. The R.A.F. was, he maintained, the foundation of civil aviation as we had it to-day, and it is due to them that we have been able to do as much as we have done, the R.A.F. gets the money and is also the biggest customer of the aircraft trade, they have blazed the trails on all new routes with such flights as that of the four machines which are now on their way from Cairo to the Cape, the flight in Nigeria and many other exploration flights. Many people said that the R.A.F. was not large enough, but he felt sure that if they were unable to increase the size they were, at least, far ahead of all others by demanding quality before quantity—and they had got it—and everyone in the country ought to feel proud of the R.A.F. in this respect.

Lord Thomson said that although many people ran down the Imperial Airways the fact remained that they were the nearest to being a paying proposition of any other such concern in the world; the mail lines in America were held up as paying, but the fact that extremely advantageous contracts were given them, which were in effect subsidies, was often overlooked. One particular avenue where unsubsidised aircraft might well be worked would be as feeder lines to the main air routes in the Dominions, there is no monopoly here, he said, and their formation would be welcome.

The question of light aeroplane clubs, was one which had had his especial blessing, and he was in full agreement with any scheme whereby they would be paid by results. At the moment there were 57 subsidised and 33 unsubsidised clubs in England and the Dominions, and it was hoped that this number would continue to grow at the rate it was doing.

With regard to airships, Lord Thomson said that he had a special interest in them and no one could be a greater advocate of their ultimate utility than he was. Most of the critics, he averred, showed that they had little or no idea as to what they were talking about, and he would very much like to arrange a trip for them all. The point which had not been made enough of was the fact that they were admittedly experiments, and as such could not fairly be looked upon as the final word in the commercial application of the class of ship for which they were the primary experiment, already the value of the knowledge gained in the short time since their completion was of infinitely greater value than the cost of the ships, and the tests had shown that they were justified in having a very reasonable optimism for the future of lighter-than-air craft. In November, R 101 rode out a gale when at the mooring mast which reached a force of 83 m.p.h. and line squalls in which the wind veered 135° in one minute, and these tests were survived triumphantly. In 1924 when they were first started there were no other nations building airships, but now there are two others, both the United States and Germany were alive to the value of these as a means of long distance transport and the British Empire must not be left behind. Much, he said, has been said about the wonderful organisation of airlines in the United States, but a friend of his had recently returned from a prolonged visit to that country and what he had seen had made him say that he would never grouse again about the state of affairs in this country, for over there it was chaotic while here things might be slow but they were at least steady.

Aviation, said Lord Thomson in conclusion, had been developed in the hot-house of war, but now we must get on with it or get out of the march of human progress.

Among those present were:—

Lord Southborough (who presided), Marshal of the Royal Air Force Lord Trenchard, Lord Luke, Colonel J. L. Ralston (Minister of National Defence, Canada), Air-Marshal Sir John F. A. Higgins, the Maharaja of Burdwan, Maj.-Gen. Sir Granville Ryrie, Brig.-Gen. Sir Samuel H. Wilson, the Hon. J. E. Fenton, Sir Louis W. Dane, Sir Edward Harding, Mr. F. Montague, M.P., Sir Atul Chatterjee.

Mr. W. C. Angwin, Sir Albion R. Banerji, Sir Henry Barwell, Sir Harry Brittain, Sir Dennistoun Burney, Sir James Connolly, Sir Herbert Daw, Sir Howard D'Egville, Sir Robert Donald, Sir George Fuller, Admiral Mark Kerr, Mr. W. Lunn, M.P., Sir Newton Moore, M.P., Sir Benjamin Morgan, Sir James Reynolds, M.P., the Master of Sempill, Dr. Shiels, M.P., and Sir Leslie Wilson.

## CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

## ACCELERATION

[2275] In reply to Mr. Russell, I apologise for having applied to aeroplanes a statement that he only meant to apply to lifts.

I am afraid that I do not yet see why a force, because it is defined in terms of the acceleration it would produce if unopposed, should be considered as giving an acceleration to a mass that it is unable to move; but if Mr. Russell can visualise the state of St. Paul's more clearly by this means it is perhaps justified. Why he or anyone else should want to consider St. Paul's or a Bristol Fighter in relation to the moon or a spiral nebula I fail to see, unless they find joy in marshalling an array of accelerations; aeroplanes are not yet concerned with inter-stellar communication, and it is already sufficiently complicated to consider them in relation to the Earth and the Air Ministry.

Regarding the weight on the string, Mr. Russell is not even content with his ideal of one acceleration per force, but wants to split the string tension up radially and tangentially. If the circle is horizontal there is also a vertical acceleration, but all these can be expressed as one *real* ("resultant") acceleration or any number of *imaginary* ones for easy visualisation. Adding accelerations vectorially, seems, in reality, to be adding the forces after you have called them accelerations.

Lastly, I am sorry to differ from Mr. Russell again, but I always understood that gravity was a *force*; Mr. Russell in fact referred to it as a force in his letter published on December 20, and now he says it is an acceleration—to my simple mind a force cannot be an acceleration also. However, I have wasted too much of your valuable space already.

Edgware, Middlesex.

February 4, 1930.

W. E. GRAY.

## CHEAPER FLYING

[2276] I am one of those whose interest in aviation is mainly fostered by the perusal of the various journals, including FLIGHT, and occasional visits to aerodromes.

I should like to express my opinion of a matter which seems to interest some of your readers.

We are continually being asked to be airminded. I know a number of people who are airminded, but how far can they get? If they want to fly they pay 5s. to 10s. and go up in an Avro 504, that is all they can do: they cannot afford to learn to fly, or to travel by air! I think it is largely the first cost and cost of running modern English light 'planes that brings about this state of affairs.

If machines of less horse-power were on the market, it would be cheaper for us to learn to fly, and cheaper for us to hire and buy them.

Why do our Moths, Avians, Spartans, Bluebirds, etc., need 100 h.p. to pull them along; I appreciate that, in 1925, the Mark I Cirrus was not enough, but now with better streamlining and airscrews it should be.

Continental machines get along all right with 15-30 h.p. per person carried. The Koolhoven F.K.41 had a very fair performance with a 60-h.p. Siemens, and I should very much like to know why Mr. Desoutter fits the Hermes as standard on his version of this machine; I should have thought that the Cirrus III would have been more than enough.

The records held by the Klemm (Daimler and Salmson) seem to show that a light machine can have a really useful performance. Surely a folding wing biplane of not more than 30-ft. span could be made as efficient aerodynamically.

I think that small two-seaters, with an engine of 30-60 h.p., with landing, cruising, and maximum speeds of about 40, 75, and 85 m.p.h., a range of 200 miles, and a fuel consumption of 30 miles per gallon, and costing about £400, could help British aviation enormously.

Thinking this I wish the best of luck to the Boulton and Paul "Phoenix."

In conclusion, I congratulate you on your Birthday Number, and point out that I am one of the number to whom a car still remains a luxury.

Haywards Heath, Sussex.

February 3, 1930.

P. D. B.

## Another Blackburn "Iris III" for R.A.F.

THE second Blackburn "Iris III" metal flying boat built for the R.A.F. was successfully launched at Brough on February 5, and after a trial flight over the Humber it was flown by R.A.F. pilots to its base at Cattewater.

## GLIDING

[2277] I enclose an extract from Wm. Beebe's book, "Galapagos; World's End; The Arcturus Adventure," which shows that the Frigate bird can soar without flapping its wings. The bird weighs about 3½ lbs., and has a wing-span of about 7 ft.

"Within reaching distance of my seat, a male Frigate bird sat on his nest. . . . I reached over and stroked it, with but slight protest. . . . taking the tip of one great wing in my hand, I raised it as high as I could reach. The bird raised the other, and lightly as thistle-down lifted and drifted away. Its ascent could not have been more effortless if the pouch (throat-sac) had been filled with hydrogen. . . . Again the male let the breeze lift him, and I watched him rise without a single flap or movement of wings or feathers. Up and up he rose, until the red breast became a faint spot of colour. Then with half-closed wings he dropped like a plummet."

I suppose that what happens is this—that the bird, owing to its light loading, is lifted off the ground, and then by balancing, uses the force of gravity, tending to carry it downwards and forwards, in conjunction with the pressure under the wings, carrying it upwards and backwards, in the manner of the string of a kite. And if this is so, I do not see why a glider should not be able to do the same thing, if the loading and relative wing-span were the same. How this could be done, is for experts to decide.

H. G. BUTT.

Cheltenham,

February 4, 1930.

## MAN-PROPELLED AIRCRAFT

[2278] Twenty years ago I studied soaring flight under excellent conditions in the hills of India.

Adding to my own knowledge the work of other students does not bring me any closer to the real driving force of soaring flight.

May I suggest that soaring flight be left to the inherent instincts of the natural inhabitants of the air, and its place be taken by a determined effort to soar by one's own power.

As far back as 1922 I constructed a tractor fuselage of light and common pattern. My 4-ft. 6-in. steel propeller was driven by a straight bevel drive (gear), round about 300 r.p.m. it would move from a stationary position in a confined room. My maximum propeller speed was approximately 500 revs. Machinery was crude and inexpensive. Using my feet to drive compelled me to incorporate the rudder control on the usual joy stick. My two planes were 25 ft. by 4 ft. 6 in., cambered and sparless, of  $\frac{1}{8}$  in. birch veneer. Ample-strutted these proved exceptionally rigid.

The great aim of this kind of 'plane was minimum of resistance.

By making a fetish of resistance and reasonable light weight, I am confident that flight under our own power is a practicable proposition.

J. M. HARGREAVES.

Caversham, Reading,

February 2, 1930.

## \* NOT A FIAT

[2279] With reference to the article regarding the death of Warrant Officer T. Dal Molin, which appeared on page 146 of your issue of January 24, 1930, we beg to state that the machine flown by the above-mentioned officer at the time of his tragic crash into Lake Desenzano was not of Fiat construction, neither was it equipped with Fiat engines.

Torino,

February 5, 1930.

FIAT SOCIETA ANONIMA.

[At the time it was not known which machine Dal Molin was flying, and we pointed out that it was either the Fiat C.29 or the twin-engined S.65.—Ed.]

## Aerodrome for Carlisle

THE Carlisle Corporation has completed the purchase of the Greymoor Hill Estate for the formation of a municipal aerodrome, but construction work will not be started until it is known to what extent the Government will assist.





# AIR TRANSPORT

## ONE YEAR'S AIR TRAFFIC IN SWITZERLAND

**T**HE following particulars regarding the air traffic accomplished by the two principal air transport concerns in Switzerland—Cie. Ad Astra-Aéro S.A. and Balair—during 1929 may be of interest.

Ad Astra company—which, by the way, completed its tenth year of aerial activities—operated two international and three internal air services, as follow:—Zurich-Stuttgart-Halle-Leipzig-Berlin (April to October 31), in conjunction with the German Luft Hansa; Basel-Zurich-Munich (May 1 to October 31); Lausanne-Berne-Zurich (June 10 to September 28); Geneva-Lausanne-Chaux de Fonds-Basel (June 3 to September 28); and a double service St. Gall-Zurich (May 1 to September 28). During February and April a winter service was operated between Zurich-Munich.

During the above periods of operation Ad Astra carried 3,985 paying passengers, 52,000 kg. mails, 50,000 kg. freight, and 14,600 kg. extra luggage. These figures represent 40.6 per cent. of the total disposable load available. The total distance of the entire Ad Astra system is about 1,504 km. (934.5 miles).

In addition to these regular services Ad Astra also did a considerable amount of touring, taxi, and joy-riding work, in which 5,410 passengers were carried. Many passengers were flown in special aerial excursions over the

Lakes and Alps, the latter trips being especially popular. For these a three-engined Fokker is employed, carrying 15 passengers, and flights have been made over Mont Cervin, Mont Blanc, etc. Finally, the Ad Astra company also

organised the aerial hunting expedition of Baron Rothschild from Zurich to Nairobi in the Fokker "Switzerland III," piloted by Walter Mittelholzer (a director of Ad Astra) and accompanied by second pilot A. Kunzle and Mechanic Weymann.

Balair, in 1929, operated over a series of lines 2,034 km. (1,264 miles) in extent, extending northward to Amsterdam, southward to the Mediterranean, and eastward to Vienna. This company employs single- and trimotored aircraft, and operates the following international lines:—Geneva-Zurich-Munich-Vienna (May 1 to October 31); and Basel-Geneva-Marseilles, with connection to Barcelona (May 1 to October 31) in conjunction with the German Luft Hansa; Zurich-Basle-Brussels-Rotterdam-Amsterdam (May 6 to August 31), in conjunction with the Dutch K.L.M.

Balair machines during this period made 1,180 flights (1,955.5 hours' flying), without the smallest accident, and only one forced landing outside an aerodrome, due to bad weather, was made, and this without damage to the machine. The three services mentioned above were



**"A MINOR EXCURSION":** One of the spheres of activity of the Ad Astra Co., of Switzerland, in addition to their regular air services was Baron Rothschild's Aerial Big-Game Hunting Expedition to Kenya in a Fokker. Our picture shows the chief pilot, Walter Mittelholzer (centre), second pilot A. Kunzle (right), and Mechanic Weymann, of this expedition.



**AIR TRANSPORT IN SWITZERLAND:** One of the Balair machines being loaded with freight, of which the company carried a considerable amount.

operated with a regularity of 98·6, 98·4 and 99 per cent. efficiency.

Passengers, mails and freight carried on these routes during 1929 were as follow:—Passengers, 2,758; mails, 48,000



**AIR EXCURSIONS OVER THE ALPS: A view, from M. Thoret's Potez 32 "Alpine Aerobus," of Glacier du Tour (3,500 m.), Mt. Blanc range.**

kg.; freight, 178,000 kg.; extra luggage, 31,600 kg. In addition to these regular air services, Balair also executed 303 special flights and carried 1,324 passengers. For the 1930 season the Balair company is adding four tri-motor Fokkers of the latest type.

While on the subject of air traffic in Switzerland, we think the following particulars of the aerial Alpine activities (in the French Alps) of the well-known French pilot, M. Thoret, will be of interest. M. Thoret, who, so to speak, has specialised in mountain flying, is at present carrying out a rather wonderful aerial service in the Alps. At Le Fayet, in the Chamonix Valley—and only a short distance from Chamonix itself, which is a very popular and charming centre for tourists to the French Alps—M. Thoret has established an aerodrome 560 m. (1,837 ft.) above sea level, and from here makes delightful flights over Mont Blanc, the Chamonix Valley, and over the Swiss frontier through Col de Balme. The flight, which is about 115 km. (71·5 miles) in length and takes 1 hr. 15 min., affords an excellent view of the Mont Blanc range, Chamonix Needles and all glaciers.

These trips are made during the two "seasons"—December 15 to March 15, and June 15 to October 10—and cost 500 francs per passenger. That they are popular may be gathered when it is stated that during the last four seasons 1,300 passengers were carried. M. Thoret uses a Potez 32 five-seater cabin monoplane fitted with a 260 h.p. Salmson air-cooled radial engine of normal type. The ordinary wheel landing gear is employed, as there is seldom snow at Le Fayet aerodrome, and the snow, in any case, does not affect the landing. In order to keep the

passengers informed as to the various "points" of interest as they fly over them, M. Thoret has installed a device called the "Aviophone"—a kind of loud-speaker—by means of which he talks to his passengers throughout the flight. The cabin is also heated, so that the passengers may make the journey without discomfort.

M. Thoret has so planned this flight that all the time the machine is within gliding distance of the aerodrome. In fact, as previously stated, M. Thoret has developed his mountain flying into a fine art. Thoret, it may be remembered, was taken prisoner by the Germans during the war, and it was while interned in Switzerland he got the idea of mountain flying. Subsequently, when he returned to France, and flying (he was instructor in Military flying school), he put his idea into practice. He always made a speciality of soaring flight, not only in gliders, but in aeroplanes also, with engine stopped. Some of these "vols sans moteur" may be remembered by our readers, one being of 9 hrs. 4 mins. duration in Alpilles range, another—in a seaplane—of 3 hrs. 33 mins., during which he climbed some 500 m., and many others.

His experience gained in soaring glides, he says, gave him the "Key of the Mountains," and we think there are few pilots possessing such great skill in mountain flying as that displayed by Thoret. Incidentally, in addition to these Alpine flights, M. Thoret's other activities consist of a mountain flying school and gliding.

And so, visitors to Chamonix will find, besides its many delightful attractions in the way of winter sports etc., an additional attraction, of no small interest, in M. Thoret's Aerodrome de Passy-Mont Blanc, Le Fayet. The aerodrome itself is in beautiful surroundings and possesses an excellent restaurant. The P.L.M.—which, with the Potez Company, is, we believe, interested in this venture—proposes to extend the aerodrome in the near future, while an additional machine will also be put into service.



**Thoret's Potez 32 monoplane with which he makes "personally conducted" tours over Mt. Blanc from the aerodrome de Passy-Mt. Blanc, Le Fayet.**

#### N.F.S. Air Taxi Service

THE air taxi service, organised by National Flying Services, will be inaugurated to-day, February 14, by Mr. J. H. Thomas, at the London Air Park, Hanworth. After luncheon at the Hanworth Club, Mr. Thomas will inspect the fleet of air taxis and name the D.H. 61 seven-passenger machine, "Leone," which has just been acquired.

#### Some Imperial Airways Statistics

TRAFFIC returns on Imperial Airways for December last show: Miles flown for December, 71,282 against 41,656; miles flown since April 1, 1929, 1,031,292 against 825,179; ton miles for December, 43,141 against 30,454; ton miles since April 1, 1929, 858,184 against 682,326; receipts for December, £33,311 against £20,837; receipts since April 1, 1929, £474,220 against £370,646.

#### Air Transport in the West Indies

THE Board of Directors of Atlantic Airways, Ltd., the British company which was recently formed to inaugurate public air transport services in the West Indies, has been greatly strengthened by the addition of Mr. Alan E. L. Chorlton, C.B.E., M.Inst.C.E., the well-known consulting engineer, who has just returned from a visit to Trinidad. The directorate of Atlantic Airways, Ltd., is now constituted by

Sir Algernon Aspinall, C.M.G., C.B.E., Chairman; Lt.-Col. Ivan Davson, O.B.E.; Air Commodore J. G. Weir, C.M.G., Mr. Alan E. L. Chorlton, C.B.E., M.Inst.C.E. The managing agents and secretaries of the company are Messrs. Garraway, Black and Co., and the registered offices are at Avenue Chambers, Southampton Row, W.C.1.

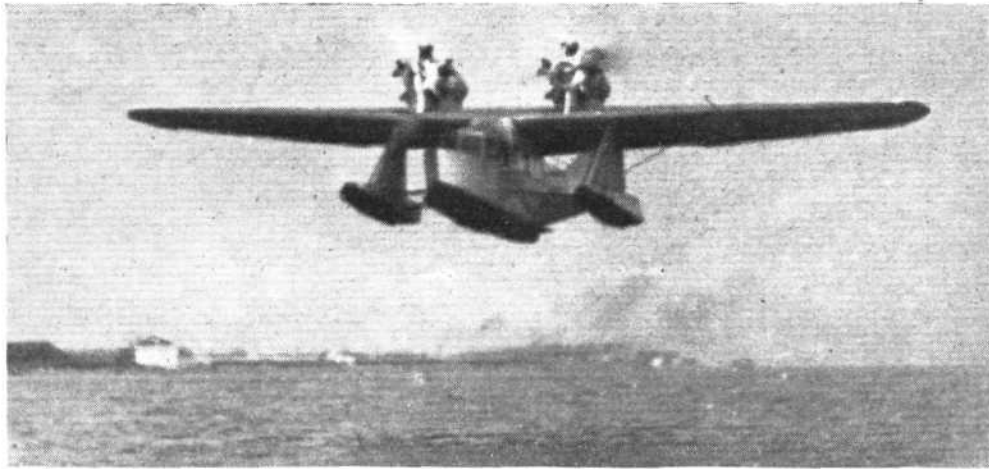
#### Batavia-Singapore Experimental Service

THE experimental flights—referred to in last week's issue—between Batavia and Singapore—carried out by the Dutch East Indies Airways, as a preliminary to the establishment of a regular service next month, proved very successful. The outward trip to Singapore, on February 10, only took 7 hrs., in spite of adverse winds. The machine, which carried eight passengers, including Sir Josiah Crosby, Consul-General at Batavia, stopped at Palambang to refuel. On the return journey, the following day, the first air mails from Singapore were carried.

#### Air Transport Company for Honduras

AIR transport is making headway in South and Central America. A new aviation company, named Compania de Aviacion Hondurena, has been organised by the United Fruit Co. It will have three machines, which are to be devoted exclusively to service in the interior of the country.





## AN INTERESTING AMERICAN AMPHIBIAN

### The Towle All-Metal T-2

**G**REAT minds think alike, we are told, and often one comes across some new idea which has occurred simultaneously to two individuals widely separated, one being totally unaware that another has been working on almost identical lines. Such a case has occurred quite recently in England and in the United States. For some time now Saunders-Roe of Cowes have been working on an amphibian version of their little "Cutty Sark" flying boat with two "Hermes" engines, and the machine has now been finished and flown in its amphibian form. It recently paid an unpremeditated visit to Lympne aerodrome, and later returned to its home at Cowes, thus making use of both its forms of undercarriage. Towards the end of last week we received from the United States the accompanying photographs and brief particulars of an amphibian recently produced by the Towle Aircraft Co., Inc., of Detroit, Michigan, and known as the Towle T-2. This machine shows how an American and a British designer have thought along almost identical lines.

The amphibian type of aircraft is one which is very urgently

#### TOWLE T-2 AMPHIBIAN

Two Wright Type 540 165 h.p. Engines

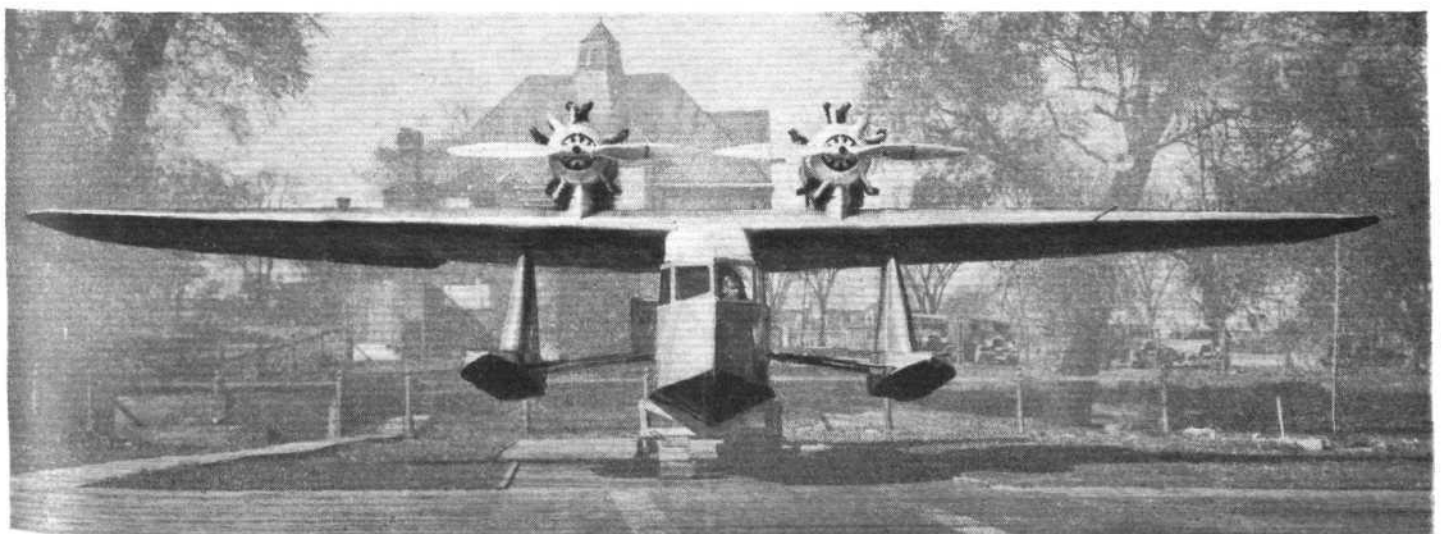
<i>Length, o.a.</i>	..	33 ft. (10 m.).
<i>Wing Span</i>	..	47 ft. 9 in. (14.55 m.).
<i>Maximum Chord</i>	..	8 ft. (2.44 m.).
<i>Minimum Chord</i>	..	4 ft. 9 in. (1.45 m.).
<i>Wing Area</i>	..	292 sq. ft. (27.1 sq. m.).
<i>Gross Weight</i>	..	4,420 lb. (2,010 kg.).
<i>Wing loading</i>	..	15.15 lbs./sq. ft. (74.2 kgs./sq. m.).
<i>Power Loading</i>	..	13.4 lbs./h.p. (6.1 kgs./h.p.).
<i>"Wing Power"</i>	..	1.13 h.p./sq. ft. (12.8 h.p./sq. m.).
<i>Maximum Speed</i>	..	135 m.p.h. (217 kms./h.).
<i>Landing Speed</i>	..	55 m.p.h. (88.5 kms./h.).
<i>Cruising Range</i>	..	600 miles (966 kms.).
<i>Petrol Capacity</i>	..	90 gallons (400 litres).
<i>"High-speed Figure"</i>	$\frac{\eta}{2kd}$	= 14.8

needed, but it is also one which is not easy of achievement without the sacrifice of a not inconsiderable amount of paying load. In a rough and ready way, one may probably assume that the weight of the amphibian gear, or more concisely the land undercarriage portion, will be for many types equivalent to one paying passenger, while in large machines it may amount to a good deal more.

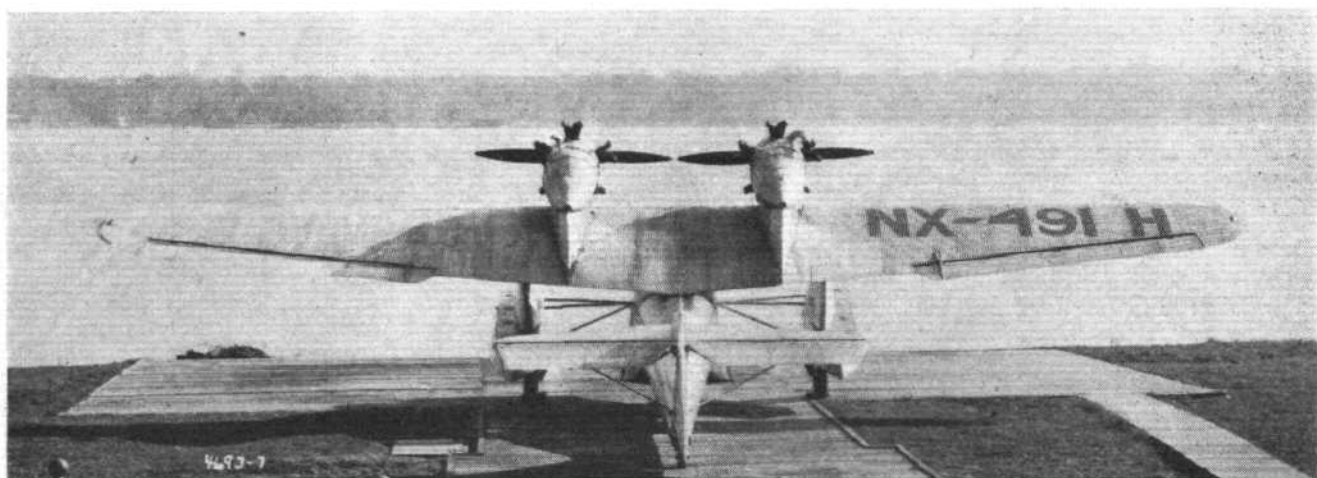
In the Towle T-2 the designer has evidently said to himself: "we must have outboard floats in any case for lateral stability on the water. Why not make use of them and their supports to carry the wheels of the land undercarriage?" Much the

same ideas must have been running through the mind of Mr. Knowler when he got out the amphibian gear of the "Cutty Sark."

Making use of the outboard floats as supports for and streamline fairings of the wheels brings with it two problems: The floats must be set deep in relation to the main hull in order that the wheels, when lowered, may project sufficiently to keep the keel of the main hull above the ground. And the landing stresses must be taken on the wings when the



THE TOWLE T-2 AMPHIBIAN: Front view of the machine on the slipway. The wheels are retracted into the outboard floats.



**THE TOWLE T-2 AMPHIBIAN:** In this rear view the machine is seen resting on its wheels which protrude through the bottom of the floats.

machine is being operated from the land. Both mean an increase in weight. On the other hand, if the wheels are made to retract into the floats, no extra drag is added, and so the performance of the machine is not adversely affected. And this is what has been done in the case of the Towle T-2. Unfortunately, the Towle Aircraft Co. has not sent us figures for the tare weight of the machine, and so it is difficult to form an idea of the increase in structure weight which the amphibian feature has introduced. The photograph of the cabin indicates that there is seating accommodation for six people, including the pilot, and as the engines develop together 330 h.p., the power expenditure per occupant is only 55 h.p., which does not impress one as being unduly high, especially for a machine with a top speed of 135 m.p.h. On the other hand, the wing loading would be considered somewhat on the high side in a British machine, being no less than 15.15 lb./sq. ft. The power loading is, however, not excessive, being but 13.4 lb./h.p. and the combined loading is not unusual, the "wing power" being 1.13 h.p./sq. ft. The Everling "high-speed figure" is high for a machine of this type, *i.e.*, 14.8, indicating that the minimum drag is low, in spite of the fact that radial engines are fitted.

Of the structural details nothing is known but what may be gleaned from an examination of the photographs. This indicates that the cantilever wings are of a form of all-metal construction somewhat similar to the Junkers. At any rate, a corrugated covering is used, although it is not certain that the Junkers' multi-spar construction has been followed.

The boat hull is planked with smooth metal plates, and shows a Vee-shaped planing surface, however, without the "ledge" found on the Saunders-Roe "Cutty Sark," and without the hollow flares as found on many other British flying boats. With its comparatively narrow beam, and the absence of any means for turning the spray down, one would expect the machine to be somewhat "dirty" on the water and to send considerable quantities of spray on to the propellers. We are unaware whether or not this is the case.

The mounting of the land undercarriage in the outboard floats and their supporting "trousers" incorporates hydraulic operation for retracting the wheels. When the wheels are raised, spring-loaded flaps close the apertures, leaving the float bottoms smooth.

The cabin accommodation can to some extent be seen in the photograph. And the front view appears to indicate that

there is a door in the starboard side of the hull, aft of the wings, by which the emplaning and disemplaning of passengers from a motor boat or dinghy should be a fairly simple operation, as the passengers are not asked to clamber about all over the machine in order to get on board.

The two Wright engines are neatly mounted on top of the wing, on streamlined supports, and well cowled. One assumes that the petrol is carried in the wing, and that, therefore, pump feed must be employed.

One objection to machines of this type is that the propellers are not only subject to a good deal of spray, but that they, and the engines, are close to the forward part of the cabin. If pusher engines could be fitted (and persuaded to cool properly) not only would the noise reaching the occupants be reduced, but the propellers would be removed from the forward portion, and passengers could enter in comfort through a forward door, and could also wave their hands and/or handkerchiefs through the windows without fear of having their nails manicured by the propellers. If such an arrangement is possible from engine considerations, it seems to us that an almost ideal amphibian is produced.



**View looking forward inside the cabin of the Towle T-2 Amphibian.** Note the generous proportions of windows and windscreen.

#### A Rolls-Royce "Eagle" for Cambridge University

THE Vice-Chancellor of Cambridge University announces that a Rolls-Royce Eagle Eight aeroplane engine has been presented to the University by the Air Ministry.

#### Ford Factory for Belgium

THE Ford Company, it is reported, has acquired a large site at Antwerp where a factory will be erected for the assembly of motor cars and aircraft for the European market.



# AIRISMS FROM THE FOUR WINDS

## R.A.F. Flight to the Cape

THE four R.A.F. Fairey III F machines of No. 14 Bomber Squadron, which left Cape Town on February 4, on the return flight to Cairo, are progressing "according to plan." On February 5 they arrived at Durban, and Pretoria on February 7. Continuing on February 10, they proceeded to Bulawayo, and reached Salisbury on February 11. Gen. Brink, Chief of the South African General Staff, is accompanying the Flight as a passenger. One of the Flight had to remain at Pretoria, in hospital, suffering from fever.

## Mr. Chichester in New Zealand

MR. F. C. CHICHESTER, who recently flew from England to Australia in his Gipsy Moth, arrived at Wellington, New Zealand, from Sydney by steamer. He received a very hearty welcome.

## French Flight to India and Back

COMMANDANTS WEISS and Girier, who recently flew from France to Pondicherry in a Breguet (Hispano-Suiza), started on their return flight last week. Flying via Karachi and Bushire, they reached Aleppo on February 7, having covered the 3,700 miles in 2½ days.

## Sir H. Wilkins' Expedition

SOME anxiety has prevailed regarding the safety of Sir Hubert Wilkins, who is engaged in an aerial expedition in the Antarctic. Since January 27, no messages had been received from his research ship *William Scoresby*, which was conveying Sir Hubert and his pilot Al Cheesman to a suitable taking off point for the flight to the South Pole. The base ship *Melville*, at Deception Island, has been unable to establish wireless communication with Sir Hubert. On February 11, however, a whaling vessel reported that it had heard from the *William Scoresby*.

## A Goliath Crashes in Kent

ON Monday, February 10, a Goliath aeroplane of the French Air Union, flying from Paris to London, crashed on the emergency landing ground near Marden, 7 miles from Maidstone, Kent. After crashing, the machine caught fire, and two passengers—Mr. and Mrs. A. A. Hodges, of Sheerness—were killed. The pilot, M. J. Nevot, the two mechanics, Messrs. Lesollic and Alboux, and one passenger, Mr. Hugh Curson, of Hull, escaped with injuries. Mr. Curson is reported to have said that one of the mechanics told the passengers that a control had gone wrong, and that the machine was going to land. Villagers who witnessed the crash said that the machine came down as if to land, then apparently tried to climb again, and then stalled and nose-dived into the ground. The survivors, although injured, are said to have made heroic efforts to get the two other passengers out of the wreckage, but doubtless both had been killed or stunned by the shock of the crash.

## French Mail 'Plane Lost

A FRENCH mail seaplane operating on the Marseilles-Algiers service, was forced down in the sea near Cape Bear and was wrecked. There were no passengers on board, but it is feared that the crew of three have lost their lives.

## Flying-Boats and the Isle of Wight

AT a recent meeting of the Isle of Wight Chamber of Commerce, the president, Mr. H. B. Fowler, said that they hoped that there would soon be an authoritative announcement on the question of providing a central aerodrome for the island.

The development of flying-boat travel was likely to be a great additional attraction for the island, as it was engaging the attention of important builders and wealthy sportsmen. He said that soon quite a number of flying-boats would provide sport on the quiet waters of the Solent, and that people would flock to the island to see races between amphibians which could alight on either sea or land. The chairman was asked whether the development of flying would render a Solent tunnel unnecessary, and he replied that that did not seem to be the opinion of those who wanted the tunnel.

## India Air Mail Delays

A QUESTIONNAIRE was recently sent out to the banks and leading business houses in London by the Civil Aviation Section of the London Chamber of Commerce to enquire as to their experience of the Air Mail to India. The chief suggestion emerging from the replies received was for the speeding up of the delivery of the mail after reaching Karachi. It is generally complained that there is considerable delay in the delivery of letters at the various terminal points so that the advantage in the saving of time by the Air Mail is partly lost. This matter has been brought to the notice of the Secretary of State for India by the London Chamber of Commerce, and it is understood that their representations have been forwarded for the consideration of the Indian Government.

Complaints of delay have also been received from India, in connection with which it has been pointed out that a letter which just misses the weekly air mail from Karachi will have to wait a whole week for the next aeroplane, and so takes as long to be delivered in England as if it had just caught the homeward P. & O. steamer at Bombay. Imperial Airways, Ltd., are now engaged in negotiating agreements with the countries over which their service to India travels. Until these have been completed, statements of a revised time-table to India must be regarded as premature.

## Light 'Plane Tour of Europe Prizes Presented

THE Challenge Cup of last year's (1929) "Challenge International de Tourisme," which was won by Fritz Morzik, representing the Aero Club of Germany, was presented to that organisation at a reception held on January 17 at the Aero Club of France. The Count de la Vaulx, President of the F.A.I., presided at this event, and in his presentation speech expressed his great appreciation of the cordial hospitality shown by all the countries to the contestants during last year's tour. Herr von Hoeppler, Vice-President of the Aero Club of Germany, accepted the cup on behalf of his organisation and thanked the Aero Club of France in the name of the contestants for the able way in which the contest had been managed. Fritz Morzik, the winner, Captain H. S. Broad, the second man, and Lucien Delmotte, the French pilot, were the contestants present who received their individual awards.

## British Aircraft for Canada

SIXTEEN British aircraft have been ordered by the Canadian Department of National Defence for training purposes in the R.C.A.F. Fourteen of these machines will be Avro "Avians," built by the Ottawa Car Manufacturing Co., while the other two will be Hawker "Tomtits" ordered from the H. G. Hawker Engineering Co., of Kingston-on-Thames.



Back to 1918: A reader of "Flight," Mr. H. G. Harris, sends us the accompanying photograph hoping that it may be of interest. The group was taken at Bulford Camp in 1918, and includes Capt. F. D. Davis (in centre with his dog), who is now at the Brooklands School of Flying.

# SCALE MODEL AIRCRAFT

By D. M. EDWARDES (Member T.M.A.C.)

INTEREST in model aircraft has lately been revived to a considerable extent. Enthusiasts have joined clubs, which has resulted in the interchanging of ideas and the production of machines with truly amazing performances.

The model most favoured at the present time is the enclosed fuselage monoplane with double surfaced wings and geared motor. These machines give excellent results as regards duration and performance in high winds, but no one appears to have concentrated on the "scale" flying model.

Admittedly, it is difficult to find machines of a type suitable for copying in miniature. There are, however, many machines, both bombers and scouts, which make most attractive models. The main factor to be taken into consideration when building a model of this type is the weight distribution. It is preferable to copy a full-sized machine employing a long-nosed fuselage, and the weight must be kept well forward, tail components being as light as possible and allowance made for giving the tail plane liberal angle of incidence.

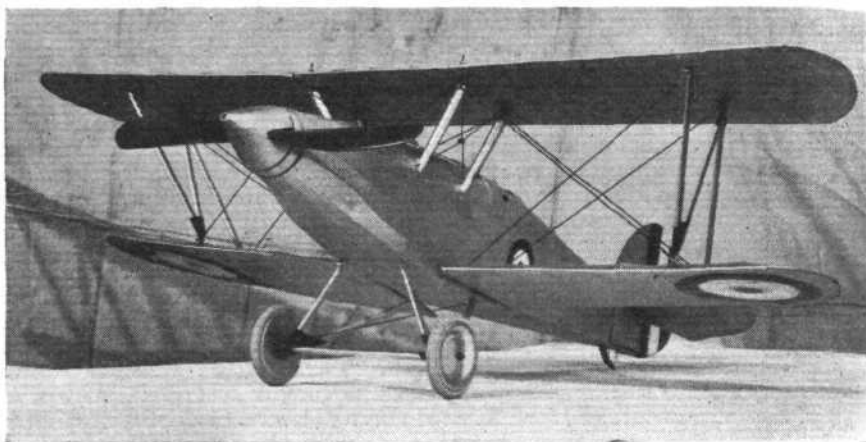
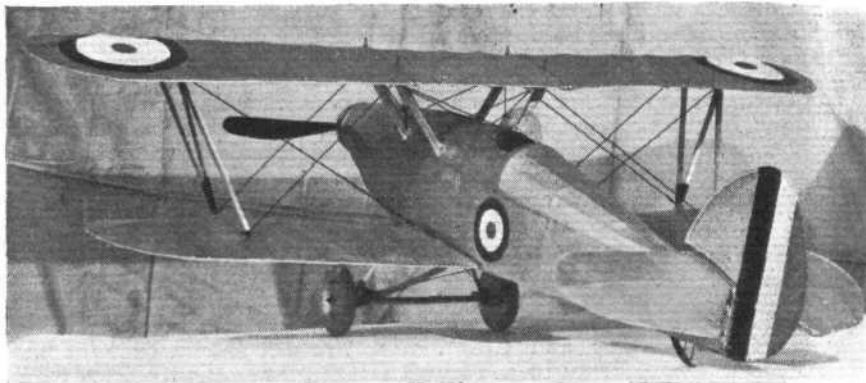
A fuselage built on standard lines with longerons, formers and stringers proves quite efficient, being both strong and light. Double surface wings of high lift section made up in spruce and three-ply are comparatively easy to make. To explain more clearly a model of this type the following brief details of a model I have recently made may prove of interest. The machine is a Hawker "Hornet," and dimensions were taken from the drawings in the Aero Show Number of FLIGHT of July 11, 1929.

**Fuselage.**—The fuselage is made up of four spruce longerons  $\frac{1}{8}$ -in. by  $\frac{1}{8}$ -in. Stays of the same section and formers of 1 mm. and  $\frac{1}{16}$ -in. three-ply. Stringers being used to obtain shape for the top of the fuselage also to carry the square section in the centre of the fuselage to the round nose.

**Engine.**—Triple-gear engine is fitted using  $\frac{1}{2}$ -in. gear wheels. The motive power being provided by 10 strands of  $\frac{1}{4}$ -in. elastic to each hook, making 30 strands in all.

**Undercarriage.**—Made up of stream line section wood. The undercarriage struts are attached to the fuselage by means of eye-screws which are screwed through the longerons into the vertical stays. Special brackets are fitted to take the axle-shaft, which is held down by elastic cord, but can rise and fall in slots which have been provided in the brackets.

**Main Planes.**—These are made up of  $\frac{3}{16}$ -in. by  $\frac{1}{8}$ -in. spruce main spars. These spars are let into 1-mm. three-ply ribs, and where centre section and interplane struts are fitted,  $\frac{1}{4}$ -in. section ribs. Wire wing tips are fitted, being bound



Two views of Mr. Edwardes' flying scale model of the Hawker "Hornet."



This view of the actual full-size "Hornet" serves as a comparison with the illustration above of the model in the same position

(FLIGHT Photos.)



The model Hawker "Hornet" just starting a successful R.O.G. flight.

to leading and trailing edges which are  $\frac{1}{4}$ -in. by  $\frac{1}{16}$ -in. spruce. Aluminium clips are utilised to attach the wire to the main spars.

**Tail Plane.**—Similar construction to the main planes is utilised, except that main spar is made up out of  $\frac{1}{8}$ -in. by  $\frac{1}{8}$ -in. spruce.

**Rudder and Fin.**—These are made out of 18 S.W.G. steel wire.

The overall dimensions of the machine are :—

Wing Span .. .. .	37 ins.
Length .. .. .	31 "
Chord .. .. .	6 "

This machine has been tried and some quite good flights obtained. Flights of 100-150 yards having been obtained. This performance could be improved by experiment with propeller and motor. The machine rises off the ground quite rapidly and is steady in flight. The necessary material for building the model was obtained from A. E. Jones, 97, New Oxford Street.





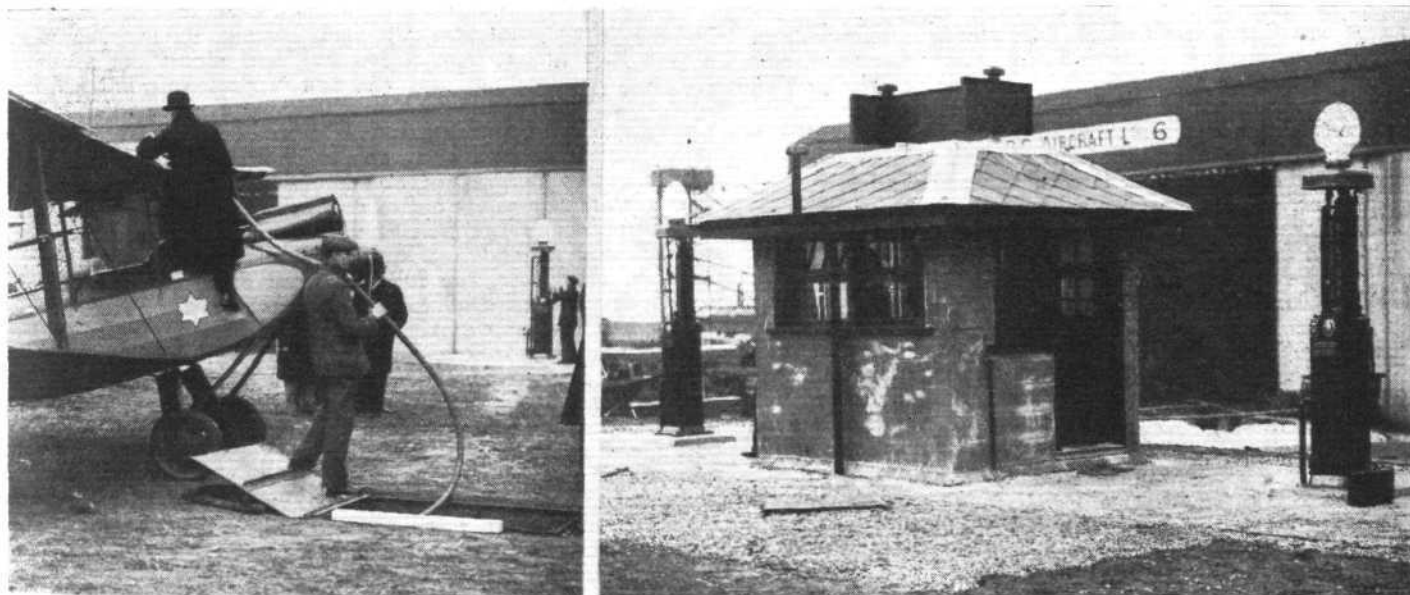
The men who will "carry the flag" for the Asiatic Petroleum Co. whose products are known to all in this country as "Shell." Left to right, F/O. B. C. Barrington-Mason F/O. W. F. Rimmer, Sir Sefton Brancker (in his capacity as well-wisher), F/O. E. L. Drew, F/O. H. C. Owen, F/O. E. T. Jones, and Lt. R. R. Bentley. (FLIGHT Photo.)

**L**AST week we gave an illustration of a metal Avian (Genet Major) which the Shell-Mex organisation were sending abroad. Actually this did not quite truthfully record the matter. The Asiatic Petroleum Co. is, as the parent company, the company which is controlling the activities of these machines abroad, and the scheme is roughly that specially selected officers of the R.A.F. reserve have been given a technical training, and will now take these machines abroad to our Dominions, where they will in every way possible further the interests of their firm.

This company has by far the largest proportion of the

world's sales of aircraft fuel and what they do not know about fuel and lubricating oil for aircraft is, as they say, "not worth knowing," but this does not mean that they are sitting back and reviewing with complacency their past achievements, for few firms can be keener on the accumulation of statistics and data which will help them to improve their products and thereby ensure that the user gets what is best for the job.

Sir Sefton Brancker was the guest at the small luncheon on Thursday, February 6, and in a short speech he wished the pilots luck in their new job.



On the left one of the new pits being used to replenish the fuel supply of a Moth and on the right the Shell filling station as it has been built in front of the A.D.C. Co's. sheds at Croydon. (FLIGHT Photos.)

The "Daily Mail" having had a run of bad luck with "Geraldine" have now purchased a Desoutter; no doubt they will be happier with their latest love!

(FLIGHT Photo.)



## INTER-SERVICES RUGBY FOOTBALL

## Royal Navy v. Royal Air Force

THE Royal Navy beat the Royal Air Force by one goal and two tries (11 points) to one try (3 points) at Twickenham on Saturday, February 8. H.R.H. Prince George watched the match from the Royal Box, and before the match both teams were introduced to him. It is to be hoped that the Prince did not suffer from the cold, which was very bitter. It was quite amusing at half-time to see all the spectators dancing little *pas de seul* in the endeavour to restore a little feeling to their numbed toes and fingers. The day, however, was fine, and the turf, which had been protected with straw, was in excellent condition.

It was a very joyous match to watch, much more even than the score would suggest. Supremely skilful and scientific rugby it was not; but it was fast and hard, with plenty of whole-hearted tackling. There was only one stoppage through a player being hurt. It was a game, a grand sporting game, with everyone going his hardest and evidently enjoying himself, and to apply hypercritical strictures to such a game would be an ungracious task.

Neither side was at full strength. Each was without its best forward. The Navy missed J. W. Forrest, who was playing for England at Dublin. G. R. Beamish, of the R.A.F., would have been helping Ireland in the same match, but owing to his father's death he was unable to play. Of ex-internationals the Navy played two Englishmen, Lieut. G. M. Sladen and M.-A.-A. Luddington, and the R.A.F. had one Irishman, Flight-Lieut. R. V. M. Odbert, the fly-half.

I may as well say straight away that Odbert was the best outside playing on either side. He worked very well with Wing-Commander J. C. Russell; he made any number of excellent openings for his own three-quarters, and when he decided to go straight through the centre it took every bit of skill and determination which the handy men could muster to bring him down. Had he been better supported, it looked as if the R.A.F. could not have failed to pile up a good tally of tries; but Odbert was usually allowed to go on alone. There was one other R.A.F. man who sometimes ran straight and well, namely, P./O. Llewellyn, but he, too, was rarely backed up as he should have been. Consequently, the ball only reached the R.A.F. wing three-quarters after a rather mechanical side-to-side bout of passing. In this sort of movement everything is left to the speed of the wing three-quarter. The centres have done nothing to increase his chances. It was just in this vital matter of speed that Cotton and Hodder failed. They are not to be blamed for it in any way. Both played very well. They went as hard in attack as nature would let them, and in defence they tackled low and hard. But if the R.A.F. had had two speedy runners on the wing the result of the match would have been far more flattering to the sky-blue jerseys.

At full back, G. M. Ievers was sound and adequate though not brilliant. The R.A.F. forwards were a very good pack. They were better than the Navy forwards in the loose, and not much worse in the tight scrums. Taking the whole game, the Navy must have heeled out more often than the R.A.F. did; but the latter had their periods of getting the ball in scrum after scrum. At any rate the R.A.F. outsiders got quite enough openings to have won the match if they had had the ability to push the advantage up to the point of scoring. Quite a number of promising openings on both sides were ruined by bad giving and taking of passes. But, with the Navy defence just a bit sounder than that of the R.A.F., no attack by the R.A.F. wings ever looked like scoring. The only chance was by individual breaks through the centre; and there, as mentioned above, the individual brilliance of Odbert and Llewellyn was not duly supported.

The Navy were just a bit the better all-round side, but the score rather exaggerates their superiority. They won the match by starting better, and piling up a goal and a try before the R.A.F. had settled down to their game. Their forwards were about equal in merit to those of the R.A.F. Sladen was steady rather than brilliant. Lee and Wood both proved very dangerous in attack, and Gosling at full back was really first class. He had more work to do than Ievers had. Gosling defended with calmness and judgment, and he made one brilliant run up the field which converted defence into attack and ultimately led to the last Navy score.

Play started at 3 p.m., and the Navy at once began to attack. In the first three minutes the Navy got the ball out and a good three-quarter movement ended in Lee

scoring rather far out to the left. Hodgkin failed with the kick. The R.A.F. tried to attack, and Sergt. Kirby, who was frequently prominent in the loose, made a determined run but was forced into touch. The Navy fly-half, Hargrave, then got the ball and went straight through the R.A.F. centre. He then passed out to the left, and finally Wood got a try in the corner. This time Hodgkin kicked a good goal. After 15 minutes' play the score was: R.N., 8; R.A.F., 0.

Five minutes later Odbert went through on his own and took the ball almost up to the Navy's line. A scrum followed, and very quickly Williams got the ball and hurled himself over for a try. Llewellyn's kick screwed off to the right of the posts.

After some give and take play, the R.A.F. forwards rushed the ball down into the Navy's 25, and there a free kick was given against the Navy. Llewellyn was not kicking badly, but he could never quite find the goal. However the R.A.F. continued to look dangerous, until, in despair of breaking through the sound defence, someone rashly punted across the goal line and so gave the Navy the easiest of touch-downs. Still the Navy could not relieve the pressure. Odbert again pierced the defence like paper and started an excellent passing movement to the left. Had Hodder been able to muster one extra m.p.h., he would have scored, but as it was he was tackled on top of the corner flag. This brought real relief to the Navy, but they also wasted a chance by punting over the line, and the R.A.F. kicked dead.

Once again Odbert swerved through the defence, and McKechnie (also a useful forward in the loose) took a good part in the movement. It ended in an abortive drop by Ievers at the Navy's goal, and just before half-time Lee ran well up into the R.A.F. 25.

Half-time scores:—Navy, 8; R.A.F., 3.

The second half opened with an epidemic of fly-kicking by the R.A.F. outsiders. Russell started it, but his was a judicious effort. He drove the ball along the ground right up to Gosling, and the full back found himself in some difficulty until over-impetuosity by the R.A.F. men let the Navy clear with a free kick. Then nearly all the R.A.F. outsiders seemed to think that fly-kicking would be an easy way to get out of difficulties. They were lucky not to kick themselves out of the frying pan into the fire.

An attack by the R.A.F. went wrong and let the ball into Gosling's hands. Seeing the opposing defence spread all over the place, the full back ran finely down the left wing right up into the R.A.F. 25. Hargrave, with a mark, took play nearer still to the line. A very poor attempt by Hodgkin to kick a penalty goal might have brought relief to the R.A.F., but did not do so. The Navy kept up the pressure, and soon after their right wing, St. Clair-Ford got over in the corner. The kick at goal failed.

Then the R.A.F. had a period of getting the ball in all the scrums, but the attacks failed to break the sound Navy defence. Pott had one very good run, and Kirby made a great attempt to cross the line. Llewellyn also put in a straight run which looked promising, but finally the Navy touched down and cleared. On the whole the R.A.F. did most of the attacking towards the end of the game, and only about once was their own goal in danger, namely, when Sladen tried to drop a goal. Thomas hurt his knee and was carried off for a space. The last notable movement of the game was a good run by Pott and Cotton, which ended in a forward pass. Probably all the spectators were relieved when the whistle went, and some of them must have done level time between the ground and Twickenham station. The teams were:—

ROYAL NAVY.—Sub-Lieut. C. G. Gosling; Sub-Lieut. J. St. Clair Ford, Lieut. T. S. Lee, Lieut. G. M. Sladen, Lieut. W. H. Wood (capt.); Midshipman A. E. Hargrave, Sub-Lieut. G. Webster; Lieut. T. G. P. Crick, M.-A.-A. W. G. A. Luddington, Lieut. J. W. Linton, Midshipman N. L. Evans, Marine C. Webb, Lieut.-Comdr. W. C. Thomas, Lieut. C. M. Morrell, Sub-Lieut. R. K. Hodgkin.

ROYAL AIR FORCE.—Pilot-Officer G. M. Ievers; F./O. R. D. Cotton, F./O. J. R. H. Pott, P./O. J. G. Llewellyn, F./O. F. S. Hodder; Flight-Lieut. R. V. M. Odbert, Wing-Comdr. J. C. Russell (capt.); Sergt. J. Kirby, P./O. G. E. S. Williams, P./O. J. McKechnie, F./O. H. A. Constantine, Flight-Lieut. J. G. Franks, Sergt. A. C. Hall, Aircraftman V. E. Maxwell, P./O. A. C. Wallace.



# AIR MINISTRY NOTICES

## NOTICES TO AIRMEN General Notice (No. 1 of 1930)

### Sub-Division into Two Series

(1) In order to call special attention to certain Notices to Airmen of navigational importance, Notices to Airmen will in future be issued in two separate series. Notices to Airmen which are regarded as of particular importance from the navigational point of view will be printed on pink paper and will be headed "Notice to Airmen—Navigational Warning." Other Notices to Airmen will be printed on blue paper as hitherto and will be headed "Notice to Airmen—General Notice." The two series of Notices will be numbered independently.

(2) Past Notices which it is considered should continue to be brought to the notice of persons concerned and which are regarded as appropriate to the "General Notice" series of Notices to Airmen, are reprinted in an Appendix to No. 1 General Notice.

(3) The following operative notices which are appropriate to the "Navigational Warning" series of Notices to Airmen are also being reprinted and are being re-issued as an Appendix to N/A. Navigational Warning No. 1 of the year 1930:—

1928, No. 68; 1929, Nos. 2, 54, 62.

(4) All past Notices to Airmen, other than those referred to in paragraphs (2) and (3) above, should be considered as cancelled or discontinued.

(5) Among the Notices now discontinued are certain Notices which were issued to call attention to particular Air Navigation Regulations, &c. It should be clearly understood that the discontinuance of such Notices in no way affects the regulations in question.

(6) Certain past Notices which now require revision and which are not being reprinted herein or in N/A. Navigational Warning No. 1 of 1930 will be re-issued immediately, in suitably amended form, in the appropriate 1930 series.

\* Obtainable from the Air Ministry.

Appendix to N/A. General Notice No. 1 of 1930

### Reprints of Notices to Airmen

The following past Notices are considered as appropriate to the "General Notice" series of Notices to Airmen. This edition of the Notices, which embodies slight revisions in certain cases, should be used for all future reference purposes and the separate copies of the Notices originally issued should be destroyed.

N/A No.

1920

52—Spain: Prohibited areas (Reprint No. 1).

105—Denmark: Customs seaplane station at Copenhagen (2).

1921

37—Denmark: Copenhagen seaplane station (3).

85—Spain: Custom, aerodromes, etc. (4).

1923

104—Czecho-Slovakia: Aerodromes (5).

1924

127—Belgium: Use of photographic apparatus on aircraft (6).

1927

84—Flights to Spain (7).

94—Customs clearance for privately-owned aircraft proceeding abroad (8).

1928

24—Reduction of congestion on the 900 metre aircraft wave (9).

37—Reporting of aircraft flying on regular routes (10).

65—Pilots' Licences (Class "B"): Extension of licences to cover further types of flying machines (11).

75—Reporting of destination on departure from civil aerodromes (12).

76—Dual controls in passenger-carrying aircraft: Safety precautions (13).

81—Air Navigation: Abolition of the terms "port" and "starboard" (14).

1929

8—Dangerous or unsafe flying over populous areas (15).

12—Accidental ignition of Holt flares (16).

14—Precaution to be taken when using Very Lights (17).

15—Maintenance of aircraft and engine log books (18).

23—Civil air maps of Great Britain (19).

29—Broadcasting of weather reports from Croydon radio station (20).

45—Formation of bubbles in aircraft compasses (21).

51—Use of tri-coloured navigation lights (22).

53—Civil air maps of Great Britain (23).

56—Orfordness rotating beacon (24).

60—Airship operations; general warning (25).

63—France: Low flying over towns, populated areas, meetings, etc. (26).

67—Flights to Egypt (27).

68—Flights along the North coast of Africa (28).

69—Burma: Rangoon (Kyaikasan) racecourse (29).

70—Flying height when crossing the English Channel (30).

### Liverpool: Customs Port for Marine Aircraft. Manchester (Chat Moss): Approval as Customs Aerodrome

1. The following area is, with the concurrence of the Commissioners of Customs and Excise, approved under paragraph 2 of Schedule VIII to the Air Navigation (Consolidation) Order, 1923, as a Customs aerodrome for marine aircraft carrying only passengers and light baggage:—

LIVERPOOL.—That portion of the River Mersey bounded on the North by Rock Ferry Pier (Latitude  $53^{\circ} 22' 30''$  N., Longitude  $2^{\circ} 59' 45''$  W.) on the west bank and by a line running true east from the eastern end of that Pier, and on the South by a line running true west from a position in Garston Docks (Latitude  $53^{\circ} 21' 0''$  N., Longitude  $2^{\circ} 54' 30''$  W.) on the east bank (Admiralty Chart 3477).

2. The following aerodrome is similarly approved as a Customs aerodrome:—  
MANCHESTER (CHAT MOSS).

3. The necessary Directions under the above-mentioned Order have been published as the Air Navigation Directions, 1929 (A.N.D.41), and the Air Navigations Directions, 1930 (A.N.D.4J), respectively. Copies of these are obtainable direct from H.M. Stationery Office, or through any bookseller, at the price of 1d. each, net.

4. A map and full particulars of the Liverpool Customs Seaplane Port appear in the Air Pilot (Volume I) Monthly Supplement No. 5, separate copies of which are obtainable direct from H.M. Stationery Office or through any bookseller at the price of 6d. net. It is hoped to publish similar details of the Manchester (Chat Moss) Customs Aerodrome in A.P.M.S. No. 6, which will be on sale at the end of the present month.

General Notice No. 5 of 1930.

Navigational Warning No. 1 of 1930

### Sub-Division into Two Series

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separate series. Notices which are regarded as of particular importance from the navigational point of view will be printed on pink paper and will be headed "Notice to Airmen—Navigational Warning." Other Notices to Airmen will be printed on blue paper as hitherto and will be headed "Notice to Airmen—General Notice." The two series of Notices will be numbered independently.

(2) Past Notices which it is considered should continue to be brought to the notice of persons concerned and which are regarded as appropriate to the "Navigational Warning" series of Notices to Airmen, are reprinted in the following pages.

(3) The following operative notices which are appropriate to the "General Notice" series of Notices to Airmen are also being reprinted, and are being re-issued as an appendix to N/A. General Notice No. 1 of the year 1930:—

1920, Nos. 52, 105; 1921, Nos. 37, 85; 1923, No. 104; 1924, Nos. 95, 127; 1927, Nos. 84, 94; 1928, Nos. 37, 75, 76, 81; 1929, Nos. 8, 12, 14, 23, 29, 45, 51, 53, 56, 60, 63, 67, 68, 69, 70.

(4) All past Notices to Airmen, other than those referred to in paragraphs (2) and (3) above, should be considered as cancelled or discontinued.

(5) Among the Notices now discontinued are certain Notices which were issued to call attention to particular Air Navigation Regulations, etc. It should be clearly understood that the discontinuance of such Notices in no way affects the regulations in question.

(6) Certain past Notices which now require revision and which are not being reprinted herein or in N/A. General Notice No. 1 of 1930 will be re-issued immediately, in suitably amended form, in the appropriate 1930 series.

Navigational Warning (No. 1 of 1930.)

Appendix to N/A. Navigational Warning No. 1 of 1930

### Reprints of Notices to Airmen

The following past Notices are considered as appropriate to the new "Navigational Warning" series of Notices to Airmen. This edition of the Notices, which embodies slight revisions in certain cases, should be used for all future reference purposes and the separate copies of the Notices originally issued should be destroyed.

(1) *Baghdad: Ground Markings.* (N/A. No. 68/1928.)

In preparation for air survey work in the vicinity of Baghdad a number of white circular ground marks have been made in various localities within an area extending 40 miles N. and 20 miles S. of Baghdad, and approximately 20 miles on each side of the River Tigris.

These marks vary in shape and size but mainly comprise a whitewashed cairn 5 ft. in diameter, surrounded by a whitewashed circle 2 ft. wide and 15 to 30 ft. in diameter. The marks are placed at distances varying from a third to a half of a mile apart.

Pilots of aircraft visiting or passing over Iraq are warned of the existence of these marks, which might be mistaken for landing ground markings.

(2) *Continental Air Route: Risk of Collision.* (N/A. No. 2/1929.)

1. In order further to obviate the risk of collision on the Continental air routes, pilots of privately-owned aircraft not equipped with W/T, are warned against flying at any time in the vicinity of the normal Croydon-Edenbridge-Ashford-Lympne air route, or of any of the routes in force in conditions of bad visibility, as defined in the *Air Pilot*, Vol. I, Part 1, Section 12.

2. No restriction as to the use of either Croydon or Lympne aerodrome by such aircraft is implied by the above.

3. The *Air Pilot*.—The *Air Pilot*, Vol. I, Part 1, Section 12, is qualified by this Notice.

(3) *France: Nice (La Californie) Landing Ground Closed to Air Traffic.* (N/A. No. 54/1929.)

1. Owing to extensive work which is taking place at Nice (La Californie) private civil landing ground, aircraft are forbidden to land thereon until further Notice.

(4) *Flight in the Vicinity of Cardington Mooring Tower.* (N/A. No. 62/1929.)

1. During the transfer of airships R 100 and R 101 from the sheds to the mooring tower, or vice versa, and while they are at or near the mooring tower, it is desired that no other aircraft should fly in the immediate vicinity.

2. Therefore, for the present, and until the cancellation of this Notice, pilots of aircraft are requested not to fly within a radius of 3 miles of the mooring tower at Cardington.

3. Special attention, in connection with the airship operations, is also drawn to N/A. No. 60 of 1929, which is being reprinted in the appendix to N/A. General Notice No. 1 of 1930.

### Night Flying without Navigation Lights

ROYAL AIR FORCE aircraft will be flying at night during the period from January 13, 1930, to March 31, 1930, inclusive, over an area bounded by straight lines joining Westerham, Sevenoaks, Keston and Warrington. Above an altitude of 6,000 ft., the aircraft will not exhibit navigation lights, unless other aircraft are observed in their immediate vicinity.

Navigational Warning. (No. 2 of 1930.)

## NOTICES TO AIRCRAFT OWNERS AND GROUND ENGINEERS

### D.H.60. X.G. & M. "Moth" Aircraft: Rib Attachment to Front Spar

1. The modification described herein should be incorporated at the earliest opportunity, and at the latest within six months of the date of this notice.

2. No renewal of any Certificate of Airworthiness will be granted until such modification has been satisfactorily incorporated.

3. The modification consists of reinforcing, by means of a small pen-steel clip, the attachment of the ribs to the front spars, and can be effected by locally cutting the fabric, which will afterwards be patched.

4. The modification is shown on the De Havilland Aircraft Co., Ltd., Drawing No. M 1226, Issue 4.

5. The above drawing, together with the necessary parts, will be supplied free, on application to the De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware, Middlesex.

(No. 2 of 1930.)

1. A NUMBER of Palmer wheels of sizes of, or greater than, 800 mm. by 150 mm. issued prior to 1925 and still in use are of the old type on which the rim is not provided with reinforcing rods.

2. There is a tendency, in the event of a heavy landing accompanied by side-drift, for the rims on wheels of this type to open out. If this opening out becomes considerable there is danger of the tyre coming off.

3. Ground engineers should examine any wheels of this kind on aircraft under their charge and if the overall width of the rims has increased by a  $\frac{1}{4}$ -in. the wheel should be replaced by a new one.

(No. 3 of 1930.)

# THE ROYAL AIR FORCE

London Gazette, February 4, 1930.

## General Duties' Branch

Sub-Lieut. T. P. Coode, R.N., is granted a temp. comm. as Flying Officer on attachment to R.A.F. (Jan. 22). The follg. Pilot Officers are promoted to rank of Flying Officer:—S. A. Davis (Dec. 29, 1929); J. R. Ayling (Dec. 29, 1929); P. W. A. Dudgeon (Jan. 28).

Flying Officer A. R. Leslie-Melville is placed on retired list on account of ill-health (Jan. 31). Flying Officer E. G. Hordern resigns his permanent commn. (Jan. 15). The short service commn. of Pilot Officer on probation R. R. R. J. Holmes is terminated on cessation of duty (Feb. 4).

## Stores Branch

The follg. Pilot Officers on probation are confirmed in rank and promoted to rank of Flying Officer (Jan. 10):—V. H. B. Roth, M. H. Robinson, J. E. V. Tyzack, R. C. Storrar, G. Blinman. Pilot Officer on probation H. H. Hilliar is confirmed in rank (Jan. 10).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### Stores Branch

**Group-Capt.**: W. R. Bruce, O.B.E., to Air Ministry (Dept. of A.M.S.R.) (D. of E.), for Stores Staff duties; 1.1.30.

**Wing-Commander**: W. Millett, to No. 4 Stores Depot, Ruislip, to command; 6.1.30.

**Sqdn.-Ldr.**: F. G. M. Williams, to R.A.F. Staff College, Andover; 20.1.30.

**Flight-Lieuts.**: K. D. G. Collier, to H.M.S. *Glorious*; 7.1.30. S. D. Dennis, to R.A.F. Base, Kai-Tak; 7.1.30. R. D. G. Macrostie, M.B.E., to No. 4 Stores Depot, Ruislip; 15.12.29. H. B. S. Ballantyne, to R.A.F. Depot, Uxbridge; 22.12.29. W. Bourne, to No. 1 Stores Depot, Kidbrooke; 10.1.30. T. G. Bowler, to R.A.F. Staff College, Andover; 20.1.30.

**Flying Officers**: M. H. Jenks, to Station H.Q., Andover; 1.10.29. The undermentioned Pilot Officers are posted to H.Q., R.A.F., Cranwell, on appointment to a Permanent Commn. (on probation), with effect from 10.1.30:—F. C. Read, W. A. Lee, L. Llewellyn, E. N. Lowe, J. W. C. Revill, G. C. Allen, B. S. Cartmel.

### Accountants' Branch

**Flight-Lieuts.**: H. G. Bushell, to Station H.Q., Andover; 14.1.30. G. N. Simon, to Aeroplane and Armament Experimental Estab., Martlesham Heath; 10.1.30. E. W. Horncastle, to Station H.Q., Hendon; 9.1.30. G. Goodall, to H.Q., R.A.F., Cranwell; 31.12.29.

**Flying Officer**: H. A. Frost, to No. 1 Stores Depot, Kidbrooke; 30.12.29.

## Aeronautical Events for 1930

THE Royal Aero Club announces the following aeronautical events for 1930:—

- April 19.—Leicester Flying Meeting (Leicestershire Aero Club).
- May 31.—Bristol Air Pageant (Bristol and Wessex Aeroplane Club). Official opening of Bristol Municipal Aerodrome.
- June 9.—Northampton Flying Meeting (Northamptonshire Aero Club).
- June 10-15.—F.A.I. Conference, Paris.
- June 14.—Manston. Royal Air Force Garden Party.
- June 26.—Ipswich Air Pageant (Suffolk and Eastern Counties Aeroplane Club). Official opening of Ipswich Municipal Aerodrome.
- June 28.—Royal Air Force Display, Hendon.
- July 5.—King's Cup Air Race (Royal Aero Club).
- July 20.—International Touring Competition for Light Aeroplanes.
- July 26.—Norwich Flying Meeting (Norfolk and Norwich Aero Club).
- Sept. 1-6.—Fifth International Congress on Air Navigation, The Hague.
- Sept. 6-28.—International Aero Exhibition, Stockholm.
- Sept. 20.—Liverpool Air Pageant (Liverpool and District Aero Club and Lancashire Aero Club).
- Nov. 28 Dec. 14.—International Aero Exhibition, Paris.

## The Guild of Air Pilots and Air Navigators of the British Empire

It is the policy of the Guild to prevent breaches of the rules of Air Navigation. It considers that such practices as low flying over towns, stunting over places where members of the public are assembled, etc. are greatly to be deprecated as being calculated to bring the professions of air pilots and air navigators into disrepute. Moreover, it is not infrequently the case that such breaches are committed for commercial purposes, to the disadvantage of those engaged in commercial aviation who refuse to lend themselves thereto. The Guild have been asked to assist H.M. Air Ministry in repressing such practices. Will any person, therefore, who observes cases of dangerous low flying kindly communicate with the Clerk to the Guild, 61, Cheapside, E.C.2, giving the number of the aircraft, the time and place and other particulars of the occurrence.

## Medical Branch

The follg. Flying Officers are promoted to rank of Flight-Lieut. (Feb. 2):—B. B. Kennedy, M.B., B.Ch., J. Kemp, M.B., Ch.B., J. B. Murphy, M.B., B.Ch., R. F. MacLachy, M.D., C.M., J. J. Quinlan, M.B., B.Ch.

## RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—C. H. Carter, A. F. Fleetwood-Lawton (Jan. 30); H. C. Osborne (Jan. 31). Flying Officer I. C. Horton relinquishes his commn. on appointment to commn. in New Zealand Air Force (Territorial) (Oct. 10, 1929); Flying Officer D. P. Cameron, M.B.E., relinquishes his commn. on account of ill-health and is permitted to retain his rank (Jan. 29); Flying Officer M. A. Newham, D.F.C., resigns his commn. (Jan. 10).

### Medical Branch

**Wing Commander**: P. M. Keane, D.P.H., to H.Q., Iraq Command, for duty as Deputy Principal Medical Officer; 11.1.30.

**Sqdn.-Ldrs.**: T. J. X. Canton, M.B., to No. 10 Group H.Q., Lee-on-Solent; 11.1.30. T. Montgomery, M.D., D.P.H., B.A., to H.Q., Aden Command; 16.11.29.

**Flight-Lieuts.**: R. Boog-Watson, M.B., D.P.H., to R.A.F. General Hospital, Iraq Command; 7.12.29. F. L. White, to H.Q., R.A.F., Middle East; 10.1.30. J. C. Neely, B.A., to R.A.F. General Hospital, Iraq Command; 7.12.29. G. H. J. Williams, to H.Q., R.A.F., Middle East; 3.1.30. D. A. Wilson, to R.A.F. General Hospital, Iraq Command; 7.12.29. S. A. McCormack (Dental), to R.A.F. Depot, Uxbridge; 22.12.29.

**Flying Officers**: P. J. McNally, M.B., to R.A.F. General Hospital, Iraq Command; 7.12.29. C. G. Harold, M.B., to H.Q., R.A.F., Iraq Command; 3.1.30. A. Sheehan, M.B., to H.Q., R.A.F., Iraq Command; 3.1.30. C. C. Fenton, M.B., B.S., B.Sc., to R.A.F. Depot, Uxbridge; 13.1.30. M. J. Pigott (Dental), to R.A.F. Depot, Uxbridge, on appointment to a Temp. Commn.; 9.1.30.

### Chaplain's Branch

The Rev. C. A. Smith, to Station H.Q., Upavon; 6.1.30. The Rev. S. M. Keen, to R.A.F. Record Office, Ruislip, for duty as Staff Chaplain (Wesleyan); 7.1.30. The Rev. F. D. Morley, to H.Q., R.A.F., Halton, for duty as Chaplain (Wesleyan), on appointment to a Short Service Commn.; 7.1.30.

## NAVAL APPOINTMENT

The following appointment has been made by the Admiralty:—  
**Sub-Lieut.**: T. P. Coode, attached to R.A.F.; Jan. 22.

## PUBLICATIONS RECEIVED

*La Navigation Aérienne Transatlantique.* By G. Voiron. Société d'Éditions Géographiques, Maritimes et Coloniales, 84, Boulevard Saint-Germain, Paris. Price 28 fr.

*The Steel Construction of Aeroplanes.* By Harry Harper. Armstrong Siddeley Motors, Ltd., Coventry.

## NEW COMPANIES REGISTERED

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